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**THE ROLE OF LEUKOCYTES AND THEIR INDEXES IN THE
EVALUATION OF ENDOGENOUS INTOXICATION AT AN
EXPERIMENTAL ABDOMINAL PATHOLOGY**

Introduction. There are frequent abdominal disorders in surgical practice, among which the most common is acute diffuse peritonitis (ADP) with mortality level of 20-92,8% and acute intestinal obstruction (AIO), in which mortality level is 15-50%, which for many years remains an urgent problem of emergency surgery and intensive care. One of the main mechanisms that characterize the course of ADP and AIO is an expression of the processes of endogenous intoxication (EI). Considering the fact that leukocytes act as cellular immunity, correspondingly their relationship can objectively describe the main stages of EI using leukocyte intoxication index (LII).

Materials and methods. The study was carried out on 146 Wistar white male rats (180–230 g) divided randomly into 5 groups: I – intact group of animals; II – control (intraperitoneal injection of sterile 0,9% NaCl, 1 ml per 100 g of rat); III – control (laparotomy was performed, exteriorized the intestines, then set it and sewed

up the abdominal wall); IV – experimental, with reproduced ADP (induced by intraperitoneal injection of 10% suspension of feces, 1 ml per 100 g of rat intraperitoneal); V – experimental reproduced AIO (ligatured of sigmoid colon); All tests were performed under general anesthesia using ketamine (40 mg/kg). Blood sampling for studies in animals was obtained at 1, 12, 24 and 48 h from the beginning of the simulation of the peritonitis and intestinal obstruction.

For evaluation of EI by leukocytes help were used the following indexes:

1. Leukocytic intoxication index (LII by Kalf-Kalif), $LII = (4 \times \text{myelocytes} + 3 \times \text{metamyelocytes} + 2 \times \text{stab neutrophil granulocytes (NG)} + 1 \times \text{segmented NG}) \times (\text{plasmocytes} + 1) / [(\text{monocytes} + \text{lymphocytes}) \times (\text{eosinophilic granulocytes} + 1)]$.
2. LII by B.A. Reis modification, $\text{Reis LII} = (\text{myelocytes} + \text{metamyelocytes} + \text{stab NG} + \text{segmented NG}) / (\text{monocytes} + \text{lymphocytes} + \text{eosinophilic granulocytes})$.
3. LII by V.V. Ostrovsky modification, $\text{Ostrovsky LII} = (\text{metamyelocytes} + \text{myelocytes} + \text{stab NG} + \text{segmented NG} + \text{plasma cells}) / (\text{monocytes} + \text{lymphocytes} + \text{eosinophilic granulocytes})$.
4. Nuclear index of the degree of endotoxemia (NIDE) by G.D. Dashtayanz = $(\text{monocytes} + \text{metamyelocytes} + \text{stab NG}) / \text{segmented NG}$.
5. Nuclear shift index (NSI) = $(\text{myelocytes} + \text{metamyelocytes} + \text{stab NG}) / \text{segmented NG}$.

The data were performed using the non-parametric criteria using the "StatSoft/Statistica 7.0". Results were significant if the P value was 95% and greater ($p < 0,05$).

Results. It should be noted that in certain hematological indices in animals with experimental ADP and AIO, who survived and died in the early studies have not found significant differences.

As a result of the research we had discovered mixed leukocyte reaction into response to the development of pathological processes immediately after 1 h from baseline in IV and V research groups. Thus, in the first group LII increased twice ($p < 0,05$), and in the second one by 1,7 times ($p < 0,05$). A similar trend had also LII by Reis and Ostrovsky with progress to completion of the experiment. In this case, as in animals

with ADP and with AIO in the first hour marked downward trend of the NIDE and NSI that persisted up to 12 h and was more pronounced in the V group. However, the experimental rats which had died in the early stages, were more reliable indicators significantly higher than LII of all with maximal progression to 12 hours of research. After 1 day of the study was noted a significant increase in all LII with great intensity in the IV group of animals, and in the V – NSI remained close to control values. Thus, in rats with experimental peritonitis the following indicators are significantly higher than in the controlled group: LII – by 9,0 times, by Reis – 2,8 times, according to Ostrovsky – 2,9 times, NIDE – 1,4 times and NSI – 1,5 times. In animals with simulated intestinal obstruction defined somewhat lower values of LII, although they significantly increased with respect to control values: LII by 5,7 times, Reis – 2,6 times, according to Ostrovsky – 2,9 times, NIDE – 1,2 times and NSI remained at control. On the 48th hour of the experiment LII exceeded the control group in IV group to 12,4-fold ($p < 0,05$), and V – 8,0 times ($p < 0,05$). The value of LII by Reis and by Ostrovsky increased more than 4 times, NIDE and NSI – twice as in animals with ADP and with AIO. During the second day of research died more than 68% and 41% of rats respectively in IV and V groups.

Conclusions. It was determined that the development of acute abdominal pathology caused by different etiological factors accompanied by the development of endogenous intoxication. The main early cellular markers of EI in case of ADP and AIO are indices of LII by Reis and Ostrovsky, which has significantly increased after the 1 h of the pathological process in the abdominal cavity. LII by Kalf-Kalif is more appropriate for use at the end of the first day of the study. Significant increase of LII in case of ADP and AIO in the later periods of the experiment can be viewed as active phagocytic immunity from further progression of dysfunctional changes and as evidenced by the slow increase NIDE and NSI. This reaction shows the inability of endogenous metabolic and cellular defense mechanisms and requires finding effective ways to increase the activity of protective systems.

Key words: leukocytes, leukocyte indexes, endogenous intoxication, peritonitis, intestinal obstruction.

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**MORPHOLOGICAL CHARACTERISTICS OF NEURODEGENERATIVE
CHANGES IN THE BRAIN TISSUE BY REPEATED INTRACEREBRAL
HEMORRHAGE IN THE EXPERIMENT**

Introduction. Vascular disorders of the brain in the economically developed countries by the end of this century became one of the leading causes of death , accounting in its structure about 14% . Cerebral stroke determines more than 30 % of all deaths from cardiovascular disease. Risk of recurrent stroke is 10-12 % subsequently decreasing to 5-8 % per year. Along with this data on the study of repeated intracerebral hemorrhage is very low, the morphological picture of the brain under similar conditions and objectives of the experiment almost never investigated .

Aim: of research which is conducted is a study of structural changes in a cortex and subcortex formations of frontal fate in the period of rehabilitation.

Material and methods. Material for the study were brain adult rats Wistar line. The experiment was conducted on two groups of animals: 1 - control group (n = 10), 2 - rats with repeated bilateral experimental intracerebral hemorrhage (n = 40). Modeling a introduction of blood to damaged internal capsule. Remodeling – after 6 months (n = 20), after 3 months-decapitation. The sections were stained with Hematoxylin-eosin, touloid-blue. Brain sections were analyzed by optical and electron microscopy.

Results. A comparative analysis of the changes in the control group and the group after two operations a brain hemorrhage in the recovery period. Brain tissue is not changed in the control (left and right frontal lobe), but there are changes , obviously,

related to the process of driving the animal, perivascular and pericellular edema, especially in the cortex. Pyramidal cells somewhat wrinkled, nuclei slightly condensed, hyperchromatic stained. Small vessels of several full-blooded, no hemorrhages. On rat brain 2 groups marked nonspecific changes characteristic histological microscopic picture after acute cerebrovascular insufficiency. In the cortex of the left frontal lobe noted marked swelling, somewhat higher than in the control series of experiments, most around the giant pyramidal neurocyte. Pyramidal neurocytes very small, with a few colored hyperchromic, wrinkled, sealed cores, or determined by their scraps. In this subcortical region of the brain swelling is almost not expressed and revealed only around the vessels. The cells are arranged randomly, more than in the cortex, expressed dystrophy. Nuclei of neurocyte dramatically shrunken, condensed, are defined by their scraps. In pathways plethoric vessel. Nuclei of neurocyte surrounding fiber pathways, slightly compacted and hyperchromic colored. In the cortex of the right frontal lobe is marked swelling, dystrophy. It should be noted that the small vessels of the cortex of the site mostly is full-blood. In the subcortical tissue - sharply dystrophy, necrobiosis and ischemic necrosis, with formation of small cysts, edema, degenerative changes slightly more than in the cortex. In the pathways noted marked swelling, proteinosis, fibers loosened, the nucleus was practically absent. At the neurocytes dystrophy development sharply around the fibers. It is possible these processes occur during the development of hemorrhagic stroke in humans, affecting the place and quality of reparative processes developing in the CNS during the recovery period of hemorrhagic stroke. The perivascular and pericellular edema are circulatory changes in the brain. Severely impaired architectonics of cerebrocortex: large areas of neuronal loss, small clusters of neurons in a state of death by lysis - evidence of degenerative processes characteristic of cerebrovascular insufficiency. Thus, we are witnessing the development of neurodegenerative processes that lead to the critical neuronal death and the subsequent development of irreversible organic processes in the brain post-stroke period is not compatible with the life of the organism or objectively alter the quality and duration of life of the organism.

Conclusion. The resulting of morphological changes from stroke remodeling are development of neurodegenerative processes in this brain cell, that are the leading cause of death of the animals and disorders of cognitive functions of the brain .

Key words: intracerebral hemorrhage, neurodestruction, inner capsule.

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INVESTIGATION OF POSTURAL AND MUSCULAR DISORDERS, NEUROLOGIC DEFICIT IN CONDITIONS OF EXPERIMENTAL BRAIN CHRONIC ISCHEMIA

Introduction. The important is the problem of the patients suffered from chronic brain blood supply insufficiency treatment. Clinical manifestation of these disorders has regress with the age of the patients and in case of the vestibular dysfunction development. Thereby the vestibular dysfunction effective and quick diagnosis has the mostly important question for the adequate treatment of these patients.

The *aim* of the work – the investigation of muscular, coordinative and neurologic disorders in rats in conditions of the experimental model of chronic brain ischemia.

Materials and methods. The experimental trials were performed in chronic conditions according to the Ukrainian and international recommendations concerning laboratory animals using in the experimental conditions. Chronic brain ischemia was modeled in rats after bilateral carotid arteries occlusion. 5 days after rats were

examined and the numbers of the rotations, their abilities to keep the posture on the horizontal sticks and rotarod as well as neurological deficit were established.

The data obtained were analyzed statistically. $P < 0.05$ was chosen as the criteria of the minimal statistical difference.

Results. In the experimental conditions after the carotid artery (CA) ligation rats demonstrated persistent left- and right-handed rotations on a horizontal surface with a frequency of 5 to 7 per min. Maximal amount of rotations was observed on the 4th experimental day - $7,6 \pm 1,0$, this index did not change significantly during the entire period of observation. Left- and right-side rotations were revealed with the same frequency. Behavior of control rats was normal, without the episodes of lethargy, weakness and slowness of movement. “Circling movements”, paresis and paralysis of the limbs were absent. 1 day after CA ligation 22 rats demonstrated lethargy and slowness of movements, all rats showed weakness of movements, 17 rats – “circling movements” that significantly prevails when compared with the same data in the control group ($p < 0.001$). Similar results failing to change the the dynamics were recorded during the entire period of experimental trials.

Control rats were able to keep the posture on two horizontal sticks and on the rotating rod during the whole period of observation. 5 rats out of 24 with brain chronic ischemia (BCI) kept posture on two horizontal sticks on the 1st day of the experiment, on the 2nd - 4 rats, on the 3rd – only 3 rats that was less pertaining the control indexes ($p < 0,001$). Only 4 out of 24 rats kept the posture of the rotating rod 1 and 2 days after CA ligation, on the 3rd day - 3 rats, on the 4th - 2 rats that was less comparing with the same control data ($p < 0.001$). Similar results observed in tests on two horizontal rods and rotating rod remained until the end of the experiment.

1 day after bilateral CA ligation 3 out of 24 rats kept the posture on the surface of the raised to 80° metal mesh, on the 2nd day - 4 rats, on the 3rd days - 3 out of 24 rats that differed in comparison with the same control indexes ($p < 0,001$). The same tendency of the data investigated reflected rats' with BCI coordinative activity preserved throughout the whole trial.

Conclusion. Changes posture, muscular activity and coordination as well as

rotational movements and motor disturbances were registered in rats on the 1st day after carotid arteries bilateral occlusion. Revealed rotations, posture, muscular and coordinative disorders as well as and motor disturbances were the same throughout the period of experimental trials. Revealed disturbances should be taken into consideration in case of clinical testing of experimentally developed schemes of treatment which should include drugs with anti-ischemic mechanism of action and those that are able to improve the blood supply to the brain.

Key words: brain chronic ischemia, vestibular dysfunction, postural disorders, muscular disturbances, neurological deficit, pathogenetically oriented pharmacological correction.

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GENERALIZED SEIZURE ACTIVITY MODULATION UNDER THE INFLUENCE OF NEW COORDINATIVE GERMANIUM-, STANUM- AND MAGNIUM-CONTAINING COMPOUNDS

Introduction. The results of experimental and clinical studies have found neurotropic effects of germanium-containing coordinative compounds. The scientists of the Odessa Mechnikov's National University synthesized compounds with germanium and stanum with additional magnesium containing with the shown already neurotropic effects. The *aim* of the work – the investigation new coordinative compounds (Mg.Ge.citric acid – germacit – and Mg.Sn. citric acid – stanmacit) on acute generalized pentylenetetrazol-, picrotoxin-, pilocarpine- and kainic acid-induced convulsions.

Materials and methods. The experimental trials were performed in acute conditions according to the Ukrainian and international recommendations concerning laboratory animals using in the experimental conditions. Acute generalized seizures were induced through i.p. pentylenetetrazol (PTZ; 40 mg/kg), picrotoxin (PTX; 2.0 mg/kg), pilocarpine (PiLo; 280 mg/kg) and kainic acid (KA; 15 mg/kg) administrations. Both germacit and stanmacit were used 30 min, 1, 2, 3 and 6 hrs before the epileptogen injections in the doses that were recalculated as 1/10, 1/20, 1/40, 1/80 and 1/135 from LD₅₀. Seizures were registered visually and their severity was evaluated according to the 6-point scale.

The data obtained were analyzed statistically. $p < 0,05$ was chosen as the criteria of the minimal statistical difference.

Results. 1. *Acute pentylenetetrazol-induced seizures.* Injection of PTZ induced development in rats acute generalized convulsions in the form of generalized tonic-clonic seizures with animals falling on one side, vegetative disorders and postseizure depression. Convulsives' intensity in 85-90% of animals was equal to 4 points. Such character of PTZ-induced convulsions registered throughout 30 min - 6 hrs after germacit (23 mg/kg) administration. PTZ-induced generalized convulsions induced 30 min after germacit (38 mg/kg) injection characterized by the development in rats mainly clonic forelimbs contractions with an average seizures intensity equal to $2,6 \pm 0,2$ points that was 1.5 times less pertaining the same in the control group ($p < 0,05$). Acute PTZ-induced seizures intensity 1 and 2 hrs after germacit (38 mg/kg) injection was equal to $2,5 \pm 0,3$ and $2,7 \pm 0,3$ points, correspondently, that differed significantly from those control indexes ($p < 0,05$).

Acute PTZ-induced seizures induced in rats after stanmacit administration (29 mg/kg and 59 mg/kg) were registered in the form of generalized tonic-clonic convulsions. The average intensity of seizures coincided with such indexes in the control observations. Being administered at a dose of 119 mg/kg stanmacit resulted in acute PTZ- induced convulsions which profile was harder, clonic- tonic seizures in 45-60% rats had repeated character. The intensity of seizures in rats in these conditions prevailed over the same in comparison with such control data ($p < 0,05$).

2. *Acute picrotoxin-induced seizures.* The character and severity of acute PTX-induced seizures in control rats were identical to those induced by PTZ. The development of generalized clonic-tonic seizures was noted after germacit (23 mg/kg and 38 mg/kg) administration. Generalized PTX-induced seizures 30 min after germacit (76 mg/kg) administration were characterized by rats' forelimbs clonic contractions with an average intensity of $2,8 \pm 0,3$ points that was 30% less than in the control ($p < 0,05$). PTX-induced acute seizures intensity induced 1 hr after germacit injection at this dose was equal to $2,6 \pm 0,3$ points that was also lower pertaining the same control indexes ($p < 0,05$). Acute PCX-induced seizures induced in rats after stanmacit administration in all investigated doses had the same clonic-tonic character as in the control animals. The average intensity of seizures in rats of these groups was the same like in the control observations.

3. *Acute pilocarpine- induced seizures.* Both germacit and stanmacit and in all investigated doses caused the development of generalized tonic-clonic seizures induced by PiLo which characteristics did not differ significantly from the same in the control groups.

4. *Acute kainic acid - induced seizures.* Injection of KA in all rats caused the development of generalized clonic-tonic seizures with falling aside, vegetative disorders and postseizure depression. Generalized KA- induced seizures induced 30 min and 60 min after germacit (76 mg/kg) administration were characterized by rats' forelimbs and hindlimbs clonic contractions development with their rise on hindlimbs (the so-called "Kangaroo posture"). The average intensity of these seizures was equal to $3,0 \pm 0,3$ points that was on 25 % less than in control animals ($p < 0,05$).

Acute KA-induced seizures in rats induced after stanmacit (59 mg/kg) injection characterized by repeated clonic-tonic seizures with significantly greater intensity compared with the same in the control group ($p < 0,05$).

Conclusion. Germacit suppresses acute generalized pentylenetetrazol-, picrotoxin- and kainic acid- induced seizures and was indifferent in case of pilocarpine-induced convulsions. Stanmacit enhances acute generalized pentylenetetrazol- and kainic acid- induced seizures and was indifferent in case of pilocarpine-induced

convulsions. Germacit and stanmacit revealed the certain range of neurotropic activity characterized by brain excitability regulation under their influence as well as acute pentylenetetrazol-, picrotoxin- and kainic acid-induced convulsions modification.

Key words: germacit, stanmacit, acute generalized seizures, pentylenetetrazol, picrotoxin, kainic acid, pilocarpine.

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GENDER AND AGE FEATURES OF FREE RADICAL OXIDATION AND ANTIOXIDANT PROTECTION UNDER DESYNCHRONOSIS

Introduction. Melatonin is a multipurpose adaptogen that regulates the function of many systems of organism. A number of melatonin, which is synthesized in the organism depends on the lighting. In previous studies, it was found that disturbance of regime lighting leads to a decrease in the number of melatonin and desynchronosis, which is a cause of cancer, heart disease, ulcers and etc. Oxidative stress is also known to take an important place in the pathogenesis of these and many other diseases. There is constantly a certain level of lipid peroxidation (LPO) in the cell during its normal life. LPO in the cell is maintained at a constant level due to a multilevel antioxidant defense system. Balance between lipid peroxidation and antioxidant protection system (AOP) is a necessary condition for a normal cell activity. Disturbances of regulatory systems lead to an excessive formation of reactive oxygen species, inhibition of antioxidant protection and development of oxidative stress. There is a complex change of cellular metabolism and damage cell

membranes, occurrence of oxidized protein leads to reducing or disappearing their functional activity. In addition, products of lipid peroxidation, such as malonic dialdehyde, are mutagenic and cytotoxic compounds. Nowadays the impact of violations of melatonin synthesis and lipid peroxidation in the development of various diseases is widely studied, but information about changes of free radical oxidation in disorders of melatonin synthesis based on an age and a gender in the modern scientific literature is not enough. The *objective* of our study was to investigate the index LPO and AOP in rats of different age and sex in desynchronization.

Materials and methods. The study was held on 48 white nonlinear rats of both sexes aged 9 and 20 months. Experimental animals were divided into 8 groups of 6 animals each: a control group numbered 1-4 – male rats and female rats at the age of 9 and 20 months, who were on a natural light regime «day-night»; an experimental group numbered 5-8 – male rats and female rats at the age of 9 and 20 months, which have been at 24-hour electric lights (desynchronization) for 2 weeks. The indexes of lipid peroxidation (diene conjugates (DC), malonic dialdehyde (MDA), oxidative modification of proteins, end product of NO metabolism) and antioxidant protection system (catalase (CAT), superoxide dismutase (SOD), glutathione peroxidase (GPx), glutathione transferase (GST), reduced glutathione (GSH) in the blood of the animals were evaluated on day 15 of the experiment for the standard methods.

Results. At the comparison of the indexes LPO at desynchronization it was found that primary (DC) and secondary (MDA) indexes of lipid peroxidation products in rats of different sexes were increased. Indexes of LPO were increased in young rats more, compared to older ones, males more than females: DC increased at young males at 30%, at old – 5%; MDA – 40% at young, by 26% – at old rats. Sex differences between indexes MDA received at desynchronization: at young males the increase was shown more in females than – 40% and 37% respectively, and 26% and 20% – in older animals. Indexes of oxidative modification of the protein at desynchronization significantly were increased in young males and females – 44% and 37%

respectively. Also sex differences between these indexes at desynchronization were received in young and old rats ($p < 0.05$). The received data were shown that gender differences in the amount of end products of metabolism of NO in the plasma of young animals in both the control and the experimental group. Significant difference ($p < 0.05$) between the indexes of NO metabolism in young animals of different sex in the control group can be explained by the stimulating effect of estrogen on the synthesis and secretion of NO. Significant difference between the indexes at desynchronization was remained: a level of end products of metabolism of NO rat females is 1.3 times higher than the index of rat males. However the level of oxidation products of nitrogen monoxide in young rat males increased with 1.8 times compared with the control ($p < 0.05$), while in rat females this increase was only 1.2 times. With an age the picture was being changed: in plasma old males content of the end product of NO metabolism at pathology was slightly higher (5%) than of the index in females ones ($p > 0.05$). Study of the main antioxidant enzymes was the next stage of our work. The activity of enzymes AOP at desynchronization in the plasma was found to be decreased. Indexes in young rat males are more being decreased than in rat females compared to control ($p < 0.05$): SOD – 38% and 30%, CAT – 33% and 29%, GPx – 39% and 31%, GST – 21% and 19% respectively. Aged animals have a decrease of ferment activity at a deflection of lightning that is proved by a decrease of an index SOD by 47% i 40%, CAT – на 40% i 30% males and females respectively. We observed less appeared disturbances in the system of enzymes metabolism of glutathione at desynchronization old rat males and rat females: decreases GPx – 11% and 21%, GST – 17% and 23% respectively. Gender differences at desynchronization are stated at young and old animals in indexes of SOD and GST with a predominance of high activity of these enzymes in females than in males, that is associated with participate estrogens in antioxidant protection. Only groups of young animals have significant differences at a level of GSH at desynchronization: at rat males reduced by 2 times, at rat female – 1.8 times compared with the control. Index GSH at older animals decline is less in the 1.3 and 1.4 times respectively ($p > 0.05$). A gender-specific level of reduced glutathione is not found.

Conclusions. Day and night lighting leads to an increase of lipid peroxidation and a decrease in the activity of the antioxidant defense enzymes in rats of a different age and gender. The most significant increase of lipid peroxidation and a decreased activity of antioxidant enzymes is in young male rats compared with control animals and animals of the opposite sex. Higher level of the enzymes antioxidant defense is saved in female rats compared with male rats of the appropriate age groups.

Key words: lipid peroxidation, antioxidant protection system, desynchronization.

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THE TENTATIVELY-RESEARCH ACTIVITY STUDYING, IN THE THE OLD RATS WITH DIABETES MELLITUS BY «OPEN FIELD» METHOD

Introduction. The brain is characterized by high intensity of energy metabolism. However, the content of the main energy substrate of the brain - glucose, is small. Vital functions of nerve cells are almost entirely dependent on the delivery of glucose by the bloodstream. Glucose - the main supplier of material for a plastic metabolism, biosynthesis of neurotransmitters, modulators of neuronal activity. Glucose utilization by the brain decreases with age. With aging, glucose transport through the extracellular matrix is getting disturbed. During aging energy metabolism is disturbed in different structures of the brain. *Aim:* it appears appropriate to consider patterns/regularities of indicative-research activities of old rats with diabetes.

Materials and methods. Experiments were performed on 45 rats (18-22 months old), weighing 260 - 340g. The animals were divided into intact ("control") and experimental (simulated with diabetes - "D") groups and kept under standard vivarium conditions. D was modelled by intraperitoneal administration of aloksan

monohydrate solution (120 mg / kg, "Sigma"). Development of Diabetes was controlled by changing the amount of glucose in the blood, which was determined by using a portable glucometer "Bionime". On day 10 the animals which had a stable hyperglycemia of peripheral blood glucose index higher than 28 mg/dL were selected.

Results. Analysis of orienting-research activities of rats showed minor changes in behavioural patterns. In the context of diabetes, indicators of locomotor activity showed a false change in the horizontal activity of animals with diabetes ($p>0,05$). Indicators of motor activity amounted to $9,44\pm 0,63$ in conditions of development of diabetes and $8,15\pm 1,02$ in control. Vertical mobility of the animals varied considerably and had a credible character ($p<0,001$). Number of upright standings of experimental group was $2,6\pm 0,19$, that in relation to the control group was lower by 23,53% ($p<0,05$). Also, orienting-research activity was quite distinctive, which was reflected in a decreased number in examined holes from $3,5\pm 0,40$ in intact group to that of $2,4\pm 0,25$ in experimental group of animals. Emotional activity was changing unreliably ($p>0,05$). The number of acts of grooming in experimental and control groups was $2,76\pm 0,27$ and $2,75\pm 0,34$ respectively. Figure of boluses in the group of middle-age rats in the experimental group made $1,68\pm 0,15$ and $1,4\pm 0,221$ in control group. Thus, indicators of orienting-research activities of rats with experimental diabetes vary due to a decline in stands tests (23,5%) and mink (31,4%), by the tendency to decrease in internal squares test (15,3%), and by the tendency to increase in the peripheral squares test (15,8%) and boluses (20,0%). Given the decrease in intensity of metabolic processes under conditions of physiological aging and the presence of age-related changes in the structure of nerve cells, the gradual development of macro-and microangiopathies during the process of gerontogenesis, we can assume a less pronounced toxic effect of the state of chronic hyperglycemia and transient hypoglycemic episodes, which accompany the course of diabetes on cognitive function of older animals. So, despite the availability of such evidence, it is highly likely to assume a significant role of changes of neurochemical properties of neurons in the implementation of behavioural reactions and disorders.

Conclusion. Indicators of orienting-research activities, in old rats with experimental diabetes, vary, due to a decline in test stands and holes, the tendency to decrease in internal squares test, and by tendency to increase in peripheral squares test and boluses. Given the availability of such evidence, it is highly likely to assume a significant role of changes of neurochemical properties of neurons in the implementation of behavioural reactions and disorders. It is considered appropriate to further monitor the changing behavioural responses in relation to changes in the conditioned-reflex activity of old rats in experimental diabetes.

Key words: alloxan, diabetes mellitus modeling, rats, «open field».

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DISTRIBUTION CHARACTERISTICS OF NOD-LIKE RECEPTORS OF INNATE IMMUNITY IN GALT OF RATS AT AN EXPERIMENTAL DIABETES MELLITUS AND PENTOXIFILLINE ADMINISTRATION

Introduction. Changing of expression of pattern-recognition receptors (PRR) of innate immune response by the gut-associated lymphoid tissue (GALT) can play a critical role in an induction and progression of T1DM. One of the most interesting class of PRR is NOD-like receptors (NLR), which are localized in the cytoplasm and expressed in macrophages, dendritic cells, lymphocytes and epithelial cells. NOD2 initiate a pro-inflammatory response largely depended on NF-kB activation which can lead mainly to the production of pro-inflammatory cytokines and chemokines (TNFa, IL-1b, IL-18, IL-12, IL6, CXCL8), nitric oxide, co-stimulatory (CD40, CD80 и CD86) and adhesion molecules. All these factors are crucial for the recruitment and

activation of effector cells and inflammatory process. Despite the ability of normal flora through unknown mechanisms enhance the expression of NOD2, which in turn activates the production of b-defensin-2, cryptdins 1-6 and other antimicrobial peptides promoting the eradication of pathogenic intestinal flora, its overexpression is a powerful trigger for the development of auto-inflammatory processes. Interesting that pro-inflammatory cytokines, such as TNF α play one of the most important roles in pathogenesis of T1DM. Indirect inhibitors of their production (for example, pentoxifylline, PTX) reduce risk of development of this pathology.

The *aim* of research: To study the peculiarities of NOD2 receptors in gut-associated lymphoid tissues (GALT) of rats with experimental STZ-induced diabetes mellitus and pentoxifylline (PTX) administration.

Methods. Researches are made on Wistar rats. For an induction of diabetes streptozotocin was used in doses 50 mg/kg. Structure of population of NOD2⁺ -cells has been studied by the analysis of serial histological sections using the method of indirect immunofluorescence with monoclonal antibodies to NOD2 of rat.

Results. It has been established that diabetes development was accompanied with 37%-45% ($p < 0,05$) increase in quantity of NOD2-cells on the 14th day, but by the 4th week of disease their number returned to the benchmarks. Induction of diabetes leads to increased in concentrations of NOD2 on 7-28% in macrophages and dendritic cells and a decrease on 8-12% in lymphocytes. PTX administration of diabetic animal reduces the quantity of NOD2⁺-cells on 29% ($p < 0,05$) in mucous membrane of villus - 42% in subepithelial zone of ILF by the 14th day of experimental diabetes mellitus. But by the 4th week of disease their number returned to the benchmarks in mucous membrane of villus and in subepithelial zone of ILF it increase on 29%. The concentration of NOD2 also decreased in 2nd week of diabetes on 8-15% in NOD2⁺-macrophages and NOD2⁺-dendritic cells.

Conclusions. The expression augmentation with NOD2 in ileum immunopositive cells can influence the differentiation of subsets of immunopositive cells and their proinflammatory cytokines production, thus acting as one of triggers of diabetes development and progression.

Key words: diabetes, NOD2-like receptors, gut-associated lymphoid tissue.

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EFFECT OF DIFFERENT PATHWAYS OF L-CYSTEINE ON MYOCARDIAL RESISTANCE TO ISCHEMIA-REPERFUSION

Introduction. It is known that hydrogen sulfide donor NaHS shows cardioprotective effect against ischemia-reperfusion injury due to its antiapoptotic, anti-inflammatory and cytoprotective properties. A precursor of hydrogen sulfide (H_2S) synthesis L-cysteine is also able to reduce the negative impact of the heart ischemia-reperfusion disturbances by limiting infarct zone, increasing the activity of superoxide dismutase and inhibiting the production of reactive oxygen species. However, the role of endogenously produced H_2S is not fully understood. We investigated the role of H_2S in heart ischemia-reperfusion-induced injury by finding out the effects of stimulation and blockade of endogenous H_2S synthesis in rats.

Materials and methods. Adult Wistar male rats were divided into 5 groups and treated with 1) physiological saline - control; 2) L-cysteine (121 mg/kg i.p., 30 min); 3) an irreversible inhibitor of cystathionine-gamma-lyase DL-propargyl glycine (PAG, 11.3 mg/kg i.p., 30 min); 4) PAG+L-cysteine (10 min + 30 min), 5) the glutathione synthesis blocker DL-buthionine-S,R-sulfoximine (BSO, 22,2 mg/kg) - PAG +BSO+L-cysteine (1 min+10 min + 30 min i.p.). Hearts were perfused by Langendorff preparation and modulated to ischemia/reperfusion (20/40 min). We evaluated post-ischemic restoration of heart function by left ventricle developed pressure (LVDP), dP/dt , heart rate, coronary flow, inflow-outflow solution pO_2 ,

oxygen cost of myocardial work (OCMW) and the heart work (LVDP x heart rate). The opening of mitochondria permeability transition (MPT) pore was estimated by releasing of a stable factor with UV absorbance (λ_{\max} 250 nm) into the coronary outflow probes during the initial phase of reperfusion.

Results. L-cysteine application led to decrease of the myocardial reperfusion disorders compared to control series. LVDP as well as coronary flow were restored to 60% from the pre-ischemic value till the 40th min of reperfusion. The maximum positive effect of L-cysteine was observed at the 10th min of reperfusion that was confirmed by 20% decrease of OCMW. PAG pretreated hearts have demonstrated significantly lower values of end diastolic pressure ($p < 0,05$) and strong tendency to increase in LVDP during all reperfusion period. However, the dynamic of OCMW repeated the values of control group. We have found that combined pretreatment with PAG and L-cysteine had a powerful cardioprotective effect against ischemia-reperfusion-induced heart function disturbances. The LVDP recovered to $92 \pm 5,3\%$ compared to control $30 \pm 9,4\%$, contractile activity was $96,0 \pm 4,0 \%$ against $64,7 \pm 9,8\%$ in the control series ($p < 0,01$), end-diastolic pressure did not changed significantly. Heart work was $98,3 \pm 7,2\%$ at the 40th min of reperfusion. Combination of PAG and L-cysteine was accompanied by a significant increase of coronary flow at the 10th min of reperfusion, although PAG as well as L- cysteine slightly reduced the initial coronary flow. We suggest that the increased coronary vessels tone under the H₂S synthesis blockade stimulated relaxation mechanisms, in particular the activation of nitric oxide synthesis. This was confirmed by more efficient oxygen utilization by myocardium: OCMW did not changed significantly during all reperfusion period whereas its value increased to 240% at the 10th min of reperfusion in the control group. Significant post-ischemic heart function recovery and improved efficiency of oxygen metabolism were accompanied with tiny quantity of mitochondrial factor releasing ($P < 0,001$) indicating that protective effects of PAG and L-cysteine might be related to the prevention of MPTP opening.

It should be noted that the observed cardioprotective effect was largely caused by de novo formation of glutathione, since the introduction of its synthesis blocker BSO completely leveled the protective effect of PAG + L-cysteine.

Conclusion. The blockade of L-cysteine conversion to H₂S using PAG led to prevention of post-ischemic disorders of heart function. Cardioprotective effect was largely caused by formation of glutathione.

Key words: L-cysteine, hydrogen sulfide, ischemia-reperfusion, heart, glutathione, DL-propargyl glycine, DL-buthionine-(S,R)-sulfoximine.

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THE EXPRESSION OF THE TRANSCRIPTION FACTORS FOXP3 AND ROR γ t IN RATS WITH ACUTE ILEITIS

Introduction. Inflammatory bowel disease (IBD) is thought to result from an aberrant immune response. Inflammation in IBD may be caused by the loss of homeostasis between CD4⁺ CD25⁺ Foxp3⁺ regulatory cells (Treg) and proinflammatory Th17 cells. The aim of this study was to investigate the effect of acute ileitis on expression intensity of the transcription factor Foxp3 and the transcription factor ROR γ t, with lymphocytes of small intestine.

Materials and methods. Male Wistar rats weighing 200–250 g were housed in standard wire-mesh bottom cages at constant temperature of 25°C and 12/12 h light/dark cycles. The rats were given water and standard laboratory diet ad libitum with no restriction prior to indomethacin injection. A total number of 20 rats were examined, including a control group (n = 10). For induction of an acute ileitis, rats

received one subcutaneous dose of indomethacin (Sigma, 15 mg/kg). Structure of population of Foxp3⁺ and RORγt⁺-cells has been studied by the analysis of serial histological sections using the method of indirect immunofluorescence with monoclonal antibodies. All statistical analyses were performed using EXCEL MS Office 2010 (Microsoft Corp., USA), STATISTICA 6.0 (Stat-Soft, 2001) software. Results are expressed as mean values ± SEM. Differences were considered statistically significant if the p value was <0.05.

Results. It has been established that development of acute ileitis was accompanied with 29-32% (p>0,05) decrease in quantity of Foxp3⁺-cells, 14-18% (p>0,05) decrease in quantity of RORγt⁺-cells and it led to the decrease concentration of the transcription factors Foxp3 and RORγt in immunopositive cells, too.

Conclusion. We established that development of acute ileitis was accompanied with the decrease in quantity of Foxp3⁺-cells, RORγt⁺-cells and it influenced concentration of the transcription factors in immunopositive cells. CD4⁺ T helper cells have important physiological functions at the large intestinal mucosal surface: they secrete cytokines thereby attracting other immune cells, inducing antimicrobial peptides, and promoting tissue repair. Therefore effector CD4⁺ T helper cells play an important 'border patrol' function, and protect the body against infections. Encounter with these bacterial derived foreign antigens in the colon can drive the differentiation of regulatory T cells or pro-inflammatory effector T cells dependent on the bacteria and the environmental milieu. If effector CD4⁺ T helper cells are uncontrolled, they can elicit tissue damage and induce disease such as IBD.

Key words: experimental ileitis, inflammatory bowel disease, Th17, regulatory T cells.

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**MORPHOLOGICAL FEATURES OF NEUROCYTES
MICROENVIRONMENT AT SPINAL MOTORIUM CENTER IN CASE OF
SCIATIC NERVE TRANSECTION WITH HIGH-FREQUENCY
ELECTROSURGICAL TECHNOLOGY APPLICATION**

Introduction. Neuron microenvironment analysis in spinal motorium center is very actual especially in investigations of new peripheral nerve treatment methods. At present time high frequency electrosurgical techniques are widely-used in general surgery but their effects on nervous system components are still not described completely. A new experimental model for electrosurgical tissue connection in peripheral nerve injury site was designed.

Materials and methods. Experiment was performed on male Wistar rats 180-200 g weight, which were divided into 3 groups. Under thiopentone-sodium narcosis rats' sciatic nerve were transected in middle third. In I group nerve epineural sutures were used to connect nerve stumps. In II group high-frequency electrosurgical technology was used for epineurium hermetisation after sutures were made. High-frequency electrosurgical complex "PATONMED" EKVZ-300 was used. Rats from III were sham-operated.

Sciatic nerve segmental motorium centres were investigated 1 and 6 weeks after surgery. Transmittive electron microscopy and immunohistochemical (IHC) investigation were performed. For IHC to visualize astrocytes and oligodendrocytes macroglial marker was used (S-100 LabVision) To quantify S-100 expression optical density analysis was used with free image analysis software (ImageJ ver. 1.45, National Institutes of Health, USA). For obtained data statistical analysis Mann-Whitney test was used (MS Statistica 10.0).

Results. According to morphometrical data analysis S-100 marker is expressed in all specimens from spinal motorium center at both experimental groups. Expression level depends on time after surgery. We observed S-100 expression (spinal anterior horn optical density) decrease in both experimental groups 1 week after surgery by 12,35 % ($p < 0,05$) in I group and 6,61 % ($p < 0,05$) in II group compared with sham-operated animals. 6 weeks after surgery S-100 expression increased by 30,86 % ($p < 0,05$) and 18,24 % ($p < 0,05$) in I and II groups compared with sham-operated animals.

Besides that, at 6 weeks after surgery we found S-100 expression increase by 34,90 % ($p < 0,05$) in II group and 33,39 % ($p < 0,05$) in I group in comparison with S-100 expression 1 week after surgery in same groups.

We also found difference in S-100 expression between rats from differ experimental groups at 1 and 6 weeks after transection and operative treatment. In experiment dynamics rats from II experimental demonstrates 6,15 % ($p < 0,05$) less S-100 expression in term 1 week after surgery and also 9,65 % ($p < 0,05$) less S-100 expression 6 weeks after surgery in comparison with animals from I group on same terms.

Conclusion. Thus, we can purpose following: S-100 expression decrease in 2nd experimental group compared with animals from 1st group indicates to higher spinal cord neuron survival rate in rats' from 2nd group; neurocyte microenvironment in sciatic nerve spinal motorium centre in cases of high-frequency electrosurgical application reacts by glial cells quantity increasing and their activation; less pronounced changes in quantity and structure of neurocytes' microenvironment in sciatic nerve spinal motorium centre in rats with electrosurgical application in comparison with epineural sutures group show us that new method usage enchases nerve recovery.

Key words: microenvironment, spinal motorium center, peripheral nerve.

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THE DOXORUBICIN EFFECT ON CULTURE OF THE ISOLATED RAT NEONATAL CARDIOMYOCYTES

Introduction. Doxorubicin - anthracycline antibiotic used in the treatment of cancer, it is especially cardiotoxic and has the ability to potentiation and cumulation. This has resulted in the use of this drug to model oxidative stress and cardiomyopathy in vitro and in vivo and made it possible to study the underlying genetic and molecular mechanisms of the anthracycline antibiotics influence on the heart mitochondria. It is known that while intercalating between pairs of nucleotides, these cytotoxic agents disrupt the replication and transcription of nucleic acids, affect gene expression and protein phosphorylation. In recent years oxidative damage of mitochondria in the development of the anthracycline cardiomyopathy is intensively studied. In addition, recently became aware the possibility of anthracycline antibiotics block the work of HIF transcription factor and inhibit the expression of HIF-dependent genes. Also, it was shown that HIF-1 plays a critical role in the regulation of ROS production in the mitochondria through different mechanisms [Morten et al, 2013; Fukuda et al., 2007; Kirito et al., 2009]. Lee et al. have proved that doxorubicin has the ability to inhibit HIF-1 via blocking its relationship to DNA [Lee, 2008], and influence on the transcriptional response of HIF [Tanaka et al., 2012], which respectively reduces HIF-1-mediated response to hypoxia [Rapisarda, Melillo, 2012]. Another target gene of HIF, telomerase (TERT), according to today's data, performs the so-called non-canonical functions in cells that do not divide (cardiomyocytes , neurons) [Cataldi, 2009] Thus, Mattiussi et al. have shown that telomerase contributes to the viability of both tumor and stem cells by reducing the production of reactive oxygen species, and acts as a transcriptional cofactor in Wnt- β -catenin pathway [Mattiussi, 2011]. But despite the large number of studies, it is necessary to emphasize that in experimental

reproduction of oxidative stress using doxorubicin, molecular and genetic mechanisms of changes in mitochondria remain little studied.

Materials and methods. Experiments were performed on isolated cardiomyocytes 2-days neonatal Wistar rats. Isolation and culturing of the neonatal rat cardiomyocytes was carried out according to the modified technique [Surova, et al., 2009]. After 24 hours of incubation, the appropriate dose of doxorubicin hydrochloride (SigmaAldrich) was added to culture. To quantify cardiomyocyte viability and functional capacity of mitochondria, we used MTT test (MTT Protocol, Wallertand Provost Lab). Cells were incubated with doxorubicin hydrochloride (SigmaAldrich) at different doses to determine the level of toxicity – 0.1, 0.5, and 1 mkM. Outcome was assessed the day after by measuring the optical density of lysate in a spectrophotometer at a wavelength of 570 nm. Moreover, to count the number of live, necrotic and apoptotic cells, the staining techniques were used - Hoeshst 33342 and propidium iodide at a concentration of 8.75 mmol/l and fluorescent microscopy (NikonEclipse E200, filter D / PI, excitation wavelength 330-380 and 510-560 nm for propidium iodide and Hoeshst, respectively).

Allocation of total RNA from cultures of neonatal cardiomyocytes was performed using a set of "Trizol RNA Prep 100" ("Isogen", Russia). Evaluation of mRNA expression of genes was made using semiquantitative reverse transcription using a cDNA synthesis kits containing reverse transcriptase "RevertAid H Minus M-MuLV RT" ("Fermentas", Lithuania). PCR was performed in thermocycler "AppliedBiosystems 2700 " ("PerkinElmer", USA). To determine gene expression, we used real - time PCR in thermocycler " 7500 FastReal -Time PCR System". Determination of the changes in gene expression in HIF-1 α system was made with TaqMan Gene Expression Assay. Analysis of the results was performed using gene Software 7500 Fast Real-time PCR Software. Statistical analysis of the results was done with a spreadsheet "Microsoft ® Excel 2003" and the Origin program.

Results. According to the results of MTT test after incubation with doxorubicin (Sigma) at doses of 0.1, 0.5 and 1.0 mkM, the level of live cells decreased by $10,9 \pm 9,99\%$; $23,6 \pm 8,76 \%$ and $31,5 \pm 9,86\%$, respectively, relative to control.

While using the methods of fluorescence staining and microscopy after incubation with doxorubicin at a dose of 0.5 mkM, the number of live cells decreased by $20,8 \pm 4,3\%$ and the number of cardiomyocytes, that died by necrosis, increased by $20,7 \pm 4,2\%$ compared with control. The real-time PCR results have showed that the expression of HIF-1 α mRNA was changed slightly – from $3,6 \pm 0,7$ to $2,9 \pm 0,8$ units in accordance to control. The expression level of target genes HIF - TERT and PDK-1 was significantly ($p < 0.05$) decreased in 4.9 and 4 times, respectively, compared with controls.

Conclusion. Our data suggest that the deterioration in the viability of neonatal cardiomyocytes after using doxorubicin is associated with a decrease in the expression of both telomerase and PDK- 1 genes. In addition, the use of this model opens new perspectives for further study of the functional, morphological and biochemical characteristics of mitochondrial functions in the development of oxidative stress both in cell culture and in experiments in vivo. There also remains the need to find ways to influence on the expression of HIF and its possible target genes for establishing the effective methods of myocardial protection while using anthracyclines at the molecular - genetic level.

Key words: cardiomyocytes, mitochondria, doxorubicin, oxidative stress, HIF-1.

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**COMPARATIVE ANALYSIS OF CELLULAR CARDIOMYOPLASTY
DIFFERENT TYPES IN EXPERIMENTAL CARDIAC INFARCTION**

Introduction. Despite of the considerable progresses in cardiosurgery and pharmaceutical therapy directed towards the treatment and prevention of myocardium infarction the treatment results and consequences of this disease leave much to be desired, what induces to seek for the new treatment methods with the usage of genetic and cellular technologies. Cellular technologies used in cardiology and cardiosurgery are usually called by the term “cellular cardiomyoplasty”, because regardless of what method is used, videlicet transplantation of embryonic, mesenchymal stem cell, myoblast, fibroblast, unfractionated bone marrow cells etc. or purposeful expression of regulatory genes of cardiac hystiocyte cellular cycle and other high-technologic cellular therapy methods; all of them are directed towards the process changes of structural and functional rearrangement of myocardium for its function improvement, videlicet for cardiac remodeling.

Materials and methods. In the studies were used 120 sexually mature Wistar-Koyot female rats with the weight of 280-300 g. The animals were divided into five groups (each group consisted of 30 animals): the first group included animals with myocardium infarction (MI) without treatment; the second group consisted of animals with embryonic stem cell transplantation after MI modeling; in the third group were animals with MSC transplantation after MI modeling; the 4 group consisted of animals with committed MSC cell transplantation after MI modeling; the 5 group consisted of animals with injection of granulocytic colony-stimulating factor after MI modeling;. MI modeling was made by our developed original method. In the experiment were used autological mesenchymal stem cells (MSC).

Results. It was demonstrated that the most perspective by effectiveness is MSC implementation. According to the data of morphological investigations it was demonstrated that the best delivery method of cellular transplant is intravenous introduction way. In the further stage took place a morpho-functional investigation of the most effective transplant introduction time after the modeling of cardiac infarction. It was proved that the less time was gone from the modeling moment the most effective is transplant influence on heart remodeling. In the experimental part of the work was shown that the mesenchymal stem cells possess homing effect that

allows them in systemic introduction achieve myocardium ischemic area and take part in forming of new vessels stimulating neoangiogenesis and decreasing scar area. We didn't observe new formed cardiomyocytes with phenotype of transplanted MSC. The neoangiogenesis process was accompanied by the concentration increase of nitric oxide, VEGF, endothelin-1 concentration decrease. Thus by analyzing of above-listed data we see that MSC transplantation implementation leads to normalizing of electrophysiological heart work in stress-imitating loading that is accompanied parameter approaching to the heart work characteristics of animal health heart. In the animal group with cardiac infarction without treatment took place deep electrophysiological deviations of heart work in qualitative as well as in quantitative direction. The implementation of transplantation of fetal stem cells leads to inadequacy of heart work that is manifested in the foci appearing of ectopic myocardium stimulation and forming of non- typical tissues in the myocardium. Thus our experimental data demonstrated safety and high effectiveness of MSC implementation in cellular cardiomyoplasty and confirmed a varied organism reaction on the fetal cells transplantation that required additional and further investigation. It should be noticed that cardiac infarction modeling in rats leads to the significant decrease of heart mass because of thinning left ventricular wall as well as replacement in its composition of normal structurally functioning myocardium by the scar tissue. In the end remodeling stage takes place a dilatation of left ventricular cavity and cardiac insufficiency development that is manifested in the EF decrease and dilatation of left ventricular internal diameter as during the systole and especially during the diastole.

Conclusion. Thus autologous MSC used in acute myocardium injury act as inductors of regeneration processes in remodeling of the injured myocardium providing reparative morphogenesis and increase of adaptational reserves of the preserved i.e. viable miocardium. The results of the histological studies found out the directly proportional dependence during the studying of functional characteristics of myocardium in the form of ejection fraction, shortening fraction of left ventricular as well as stability for stress exercise activity tolerance.

Key words: coronary artery disease, myocardial infarction, cellular cardiomyoplasty, remodeling of the heart, angiogenesis.

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OPIATE MECHANISMS OF LEVETIRACETAM ACTION UPON SPONTANEOUS AND INDUCED LOCOMOTOR ACTIVITY OF KINDLED RATS

Introduction. Chemical kindling, which is induced with repeated corazol administrations in subthreshold dosage is followed by interictal behavioral disturbances, which are determined by modulated functional state of endogenous opiate system of the brain. The aim of this study was confined to the investigations of the effects of levetiracetam upon opiate- depended component of kindling-induced behavioral manifestations.

Materials and methods. Investigations have been performed on Wistar rats weighting 180-270 g in complete accordance to GLP demands, and which have been approved by bioethics commission at Odessa National Medical University.

Kindling was induced during three weeks of daily administration of corazol in dosage of 25.0 mg/kg, i.p. All observations have been performed in 24 h from the moment of last (21th) corazol administration. Levetiracetam (UCB, Belgium) was administered in dosage of 200 mg/kg, i.p., and in 30 min the open field behavior along with postural tonic reactions have been investigated. Naloxon (10.0 mg/kg, i.p.) was administered in 10 min before levetiracetam. Control kindled animals have been administered with physiological 0,9% solution of NaCL. All results were statistically evaluated using ANOVA method and Newman- Keuls test.

Results. In kindled animals the number of crossed central squares in open field test was reduced by 3,6 times when compared with the corresponded index in intact (control) rats ($p < 0,05$). Total number of crossed squares have been reduced by 39,4% ($p < 0,05$), while rearings both against wall and without it were reduced by 4,3 and 3,8 times fold correspondently ($p < 0,05$). After levetiracetam administration (200,0 mg/kg, i.p.) the number of central and total crossed squares have been reduced when compared with corresponded data in control group by 45,0 % ($p > 0,05$) and by 22,3 % ($p > 0,05$) correspondently. The number of rearings against the wall was reduced by 2,4 times ($p < 0,05$) while rearings in the central part of open field was reduced by 47,8% ($p > 0,05$). Number of groomings was less when compared with that one in control group by 2,9 times ($p < 0,05$) and was reduced by 1,8 times when compared with kindled rats ($p < 0,05$). Naloxon (10,0 mg/kg, i.p.) caused both the increase of the number of central crossed squares in comparison with kindled rats by 70,0%, and total number of crossed squares – by 2,3 times ($p < 0,05$). Naloxon also increased the number of rearings in central part of field by 8,7 times and number of rearings against the wall by 7,2% ($p < 0,05$). In kindled animals paws under body as well as explosiveness have been registered in 20% of animals. Disturbances of corneal reflex and reflex of gaining vertical posture have been seen in 28,0% of kindled rats. Besides, exophthalmia was registered in 32,0%, and in 68,0% rats test of rising rats with their tail the addictive position of paws was seen. In 76,0% of rats heightened tail tonus, positive “bridge” test (72,0%) were observed, but only 48,0% and 44,0% of rats demonstrated the ability to keep position on vertical rod and captured the pencil with their forelimbs. Levetiracetam (200,0 mg/kg, i.p.) reduced the number of rats with the position of paws under the body up to 6,7%. Exophthalmia was registered in 66,7% while high tail tonus was seen in 86,7%. “Bridge” test was positive in 86,7 % rats, and capturing of rod with forelimbs and keeping on the rod was observed in 40,0% and 46,7% of rats correspondently. Pain behavior was reduced by 27,2% when compared with the data in kindled group of rats ($p > 0,05$). Levetiracetam (200,0 mg/kg, i.p.) which was administered after naloxon injection

(10.0 mg/kg, i.p.) did not change indices of spontaneous and induced behavior in kindled rats ($p > 0,05$).

Conclusions. Corazol kindling induction is followed by deterioration of behavioral reactions, which are determined by hyperactive state of endogenous opiate system. Levetiractem (200 mg/kg, i.p.) reduced components of postural – tonic reactions of opiate nature and this effect is blocked by naloxon (10.0 mg/kg, i.p.).

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INFLUENCE OF HYDROGEN SULFIDE METABOLISM MODULATORS ON BIOCHEMICAL INDICES AND TONE OF RAT'S AORTA IN DIFFERENT AGE GROUPS

Summary. It was investigated the influence of hydrogen sulfide (H_2S) metabolism modulators - NaHS and propargylglycine on biochemical indices and tone of rat's aorta in three age groups - immature (1 - 2 months), adult (6 - 8 months) and old (24 - 26 months). A two-week administration of propargylglycine caused a significant reduction (by 40-60 %) in H_2S -synthesizing enzymes activity and H_2S in aorta whereas the administration of NaHS increases these indices. Under the influence of propargylglycine endothelial dysfunction marker - sVCAM is significantly increased in serum of aged and adult rats. Propargylglycine reduces the sensitivity of adult rat's aorta and significantly decreases the sensitivity of old rat's aorta to H_2S vasodilation at concentrations of 10^{-6} - $10^{-3}M$, but the administration of NaHS contributes to vasodilation improvement. Administration of H_2S metabolism modulators did not significantly affect the functional condition of the immature rats' aorta.

Key words: hydrogen sulfide, propargylglycine, aorta, aging.

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COMPLEX PATHOGENETIC CORRECTION OF SUBARACHNOID HAEMORRHAGE BEHAVIOURAL CORRELATES IN EXPERIMENTAL CONDITIONS

Introduction. Subarachnoid hemorrhage (SAH) is a serious disease that is manifested by severe neurological symptoms and is accompanied by significant mortality. The pathophysiologic mechanisms of this pathology include oxidative stress and occlusion of the cerebral vessels that might also participate in the SAH sequences origin.

The *aim* of the work – the investigation of experimental SAH manifestation in conditions of separate and combined administrations of L-arginine which stimulates the nitric oxide production and pentoxifylline (PTF) which reduces the proinflammatory cytokines production and has antioxidant properties.

Materials and methods. The experimental trials were performed in acute conditions. Subarachnoid hemorrhage was induced in anaesthetized rats (i.p., ketamine 100 mg/kg) through stereotaxical bilateral autoblood (150 ml) intracerebral (in the parietal-temporal cortex area) application. Autoblood (0,3 ml) was additionally injected into the large brain cistern after the holes in the skull sealing.

The rats were observed 6 hrs after autoblood injection and the following tests were provided: rats' possibility to keep the vertical posture, duration of their inconvenient position keeping, their painful sensitivity and lethality. L-arginine (200 mg/kg and 500 mg/kg) and PTF (25 mg/kg and 50 mg/kg) were administered i.p. during 72 hrs

of afteroperational period. The data obtained were analyzed statistically. $p < 0,05$ was chosen as the criteria of the minimal statistical difference.

Results. After 6 hrs from the moment of the SAH modeling 42.9% of the rats demonstrated the postural disturbances, one rat (6,7%) died. After 12 hrs 5 rats (41,7%) failed to keep the vertical position of the body, and death was observed in 20% of animals. A day later the vertical position remained in 55,6% of the rats while lethality was 40%. Further dynamics was associated with a decrease in the number of animals that kept upright and increasing lethality.

L-arginine (200 mg/kg) administration resulted in 87,5% of the rats ability to keep the vertical position 6 hrs after the trial beginning ($p < 0,05$) and lethality was 11,1%. Later the number of animals who were able to keep the vertical position did not differ from the same control index. 12 hrs after SAH modeling the lethality (11,1 %) was lower pertaining that in the control trials ($p < 0,05$). At the end of observation (72 hrs) lethality was equal to 55,6% that was lower than the same control index ($p < 0,05$). Injection of L arginine in higher (500 mg/kg) dose 6 hrs after the beginning of the trial accompanied by postural disturbances in 20% of animals and lethality was higher than in the control group ($p < 0,05$).

The influence of PTF different doses (25,0 and 50,0 mg/kg) on the investigated SAH parameters fail to reveal significant changes compared with those in the control observations ($p > 0,05$).

In conditions of L-arginine and PTF minimal doses combined administration only 2 rats were not able to retain the vertical position, the lethality cases were absent – these parameters were less if compared with the same in the control group ($p < 0,05$). Similar differences between the groups studied parameters were maintained until the end of the observation except of 2nd day period when lethality rates between groups did not differ. Rats 6 hrs after SAH modeling demonstrated significantly reduced pain reactions expression that was equal to 0-1 points on the used scale. In rats treated with PTF (25 mg/kg), the average severity of pain responses was on 37,3% higher comparing with the same control index ($p < 0,05$). After L-arginine (100.0 mg/kg) administration the average pain intensity in rats exceeded that in the control group on 52,4% ($p < 0,05$).

In conditions these drugs combined administration in the same doses the average pain intensity was equal to $2,6 \pm 0,4$ points and was 3,3 times greater than the same in the control group ($p < 0,001$). The investigated data exceeded the same indexes in case of the co-used drugs separate administration ($p < 0,05$).

24 hrs after SAH modeling the average intensity of pain was 31.2 % less pertaining the same index in rats 6hr after the trial beginning ($p < 0,05$). L-arginine (100 mg/kg) and PTF (25 mg/kg) single administration did not alter the severity of pain. Being administered jointly these drugs resulted in an average pain severity 1.9 times higher comparing with the same control data ($p < 0,01$) and with the investigated indexes rats with separate drugs application ($p < 0,05$).

Conclusion. Separate administration of L-arginine and PTF in the dose-dependent manner prevent the development of behavioural disorders and lethality in rats with SAH. Drugs protective effects are temporary and could be observed throughout 6-12 hrs of the experimental trials. L-arginine and PTF combined administration induced the potentiated protective effect pertaining to SAH-induced behavioural disorders, pain sensitivity and animals lethality. The positive influence of the drugs combined administration could be observed within 72 hrs after application.

Key words: subarachnoid haemorrhage, autoblood, pentoxifylline, L-arginine, complex pathogenetic correction.

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**THE INFLUENCE OF CORTICOSTERONE ON PROLONGED
PENTYLENETETRAZOL KINDLING DEVELOPMENT**

Introduction. Kindling is considered as an adequate experimental model of temporal lobe epilepsy which reflects the main clinical symptoms of the disease. Kindling was shown to be characterized by the seizure activity enhancement. But additionally the expressed behavioural disturbances were shown to be developed during kindling, i.e. episodes of postseizure depression or aggression, changes of motor activity, cognitive functions, emotional and other types behaviours. Similar changes of behaviour were shown under the conditions of long-term amygdala electrical stimulation which we used to explain the identity of the long-term electrical and chemical kindling induced by pentylenetetrazol (PTZ) injections. The *aim* of the work – the investigation of corticosterone influence of prolonged PTZ kindling and morphological changes of suprarenal glands that are the main stress-eralizing organs.

Materials and methods. The experimental trials were performed in chronic conditions according to the Ukrainian and international recommendations concerning laboratory animals using in the experimental conditions. Rats were kindled using single daily i.p. PTZ (30-35 mg/kg) injections during 120 days. Corticosterone was administered s.c. in the dose 40 mg/kg. Rats were randomized on the following groups: the control rats, the kindled rats and the kindled rats with prior corticosterone injection. 4 rats out of each group once per 4 days during the first 24 days and then once per 10 days of the trials were sacrificed and their suprarenal glands were ectomized and weighted. The data obtained were analyzed statistically. $P < 0.05$ was chosen as the criteria of the minimal statistical difference.

Results. After the 9th PTZ injection all rats demonstrated myoclonic jerks of body muscles and forelimbs. The average intensity of seizures in these conditions was $1,50 \pm 0,18$ points. After the 15th convulsant injection 55 % of the rats showed clonic muscular hindlimb and forelimb contractions that were equivalent to the average seizure intensity of $2,7 \pm 0,3$ points. After the 24th PTZ injection generalized seizures were registered in all rats. The average intensity of seizures at the moment of kindling development was $4,2 \pm 0,4$ points. Later PTZ was injected with dose adjustment trying to achieve the maximal seizures development together with animals' lethality prevention. At this moment rats demonstrated repeated generalized clonic- tonic

seizures with a falling aside, vegetative disorders and prolonged postseizure depression. The intensity of seizures in the majority of rats exceeded 4 points. The long-term convulsant use changed the nature of seizures with the tonic component prevalence and tonic hindlimbs extensions together with seizures duration increase and their latency decrease.

Kindling in rats which previously received corticosterone developed faster that characterized by the fact that seizure intensity after PTZ 15th injection was 1.6 times higher compared with the same index in kindling rats without corticosterone administration ($p < 0,01$). In these conditions the latency of seizures (1.6 fold, $p < 0,05$) as well as their duration (2.6-fold, $p < 0,001$) differed significantly from the same indexes in rats without corticosterone administration. These seizure syndrome indexes remained valid in both groups rats during the 120 days of the trial.

Both rats' left and right adrenal glands before kindling formation were equal to 14.7 mg and 14.2 mg, respectively. In the course of kindling formation one could see the gradual increase of adrenal glands weight which received the significant index after the 12th PTZ injection when the mass of the kindled rats left and right adrenal glands exceeded on 32% and 31%, correspondently, the same data in rats before PTZ administration ($p < 0,05$). On the 18th day of the trial the two adrenal glands weight was greater pertaining the same data in rats before kindling (on 67% and 71%, $p < 0,01$) and was significantly higher comparing than those in animals without corticosterone (on 48 % and 51 %, $p < 0,05$). The kindled rats adrenal glands weight continued to grow during the experimental trial reaching a maximum ($31,2 \pm 3,3$ and $30,4 \pm 3,3$ mg) at the 60th day that was significantly higher than the same initial data and those in rats without corticosterone administration (in both cases, $p < 0,01$). A similar trend continued until the end of the experimental trials.

Conclusion. Long-term pentylenetetrazol-induced kindling results in the depressive state development. The expression of depressive behavioural and morphologic changes in kindled rats increases with the kindling development. Epileptogenesis and depression might have the common pathophysiological mechanisms that should be the goal of the future investigations.

Key words: pentylenetetrazol, kindling, corticosterone, suprarenal glands, pathogenetic mechanisms, stress, depression.

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ADDITIONAL PATHWAYS IN THE HEART AS A RESULT OF UNFINISHED NORMAL CARIOGENESIS

Introduction. Electrical heart instability has many etiological components, including morphological: tumor proliferation of Purkinje cells, Purkinje fibers degeneration and transformation in the "foam cells", congenital atrioventricular node polycystic, great heart defects and other [Dinov, Belozarov, 2006]. There are another congenital heart diseases, which are also the cause of arrhythmias, but the major pathogenetic link is the local malformation of the heart conduction system (HCC), and most importantly - the progress of these defects have subclinical characters and not manifest itself long time, but during physical stress can be a cause of sudden death [Tarasova, Tvorogova, 2005]. But how to explain the case when neonatal atrioventricular tachycardia reverse spontaneously disappeared by the end of 1 year of age or when they rather spontaneously occurred in adolescents or adults [Podvysotskaja, 2004]? These findings raise the possibility of thinking histogenetic flow processes associated with pathways that are completed during the first year of life and may be accompanied by these symptoms, or abnormal is not completed. The aim of our study was to investigate the processes of normal embryonic development of the human heart conduction system and finding morphological prerequisites of additional conductive pathways.

Materials and methods. We investigated the human embryos hearts since 4 to 12 weeks prenatal development. 5-7 micron thick sections were stained with hematoxylin-eosin and were processed with antibodies to alpha-smooth muscle actin (α -SMA, DakoCytomation), triplet neurofilament protein (NF, LabVision) and muscle-specific actin (MSA, DakoCytomation). Analysis of the expression of proteins were conducted quantitative and semiquantitative methods by calculating the relative volume positive tissue and assess the degree of intensity of reaction with antibodies.

Results. At the early stages of cardiogenesis pacemakers cell are part of the ventricle, moving in the right atrium area as far as the formation of the latter. At the same time the conductor role played poorly differentiated myocytes that make up the overall array infarction. Thus, early cardiomyocytes can not only be reduced but carry momentum, ie they have bipotential properties. Marking of early heart antibodies to proteins of the contractile apparatus, as well as proteins that are expressed in cells of the conduction system, revealed that in the early stages of cardiac marked almost all totally involved in the study of markers, but kondukt-specific markers are dynamic progressive decrease in the area of expression formation characteristic of SAR marker-positive areas. Analysis of these data allows to assume that the process of regression semiconductor properties of cardiomyocytes ordinary early for various reasons may be delayed as a prerequisite for remaining in the mature areas of the heart conductive properties, which are zones of increased excitability. Most often these areas are clusters of cells in the ventricular and atrial stock contractile myocardium. In the study of the processes of atrioventricular part we observed bands MSA-positive cells among mesenchymal tissue array (future connective tissue) that connected directly to ventricular and atrial myocardium - muscular bridges. The study further fate of these bridges revealed that their proximal portion to the extent of connective tissue maturation and increased heart chamber is separated from the distal part.

Conclusion. Thus, the formation of additional pathways in the heart is the result of a lack of repression conductive properties of ordinary cardiomyocytes that they have in

the early stages of cardiogenesis and remain as vestigial muscle's bridges due to insufficient separation of atrial and ventricular myocardium by connective tissue.

Key words: conductive system, cardiogenesis, arrhythmia, heart malformation.

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PHARMACOLOGICAL ACTIVATION OF ATP-DEPENDENT POTASSIUM CHANNELS IS AN IMPORTANT MECHANISM OF REGULATION OF CYCLOSPORINE-SENSITIVE MITOCHONDRIAL PERMEABILITY TRANSITION PORES OPENING IN RAT HEARTS

Introduction. At present all greater attention of the researchers attracts of ATP-sensitive potassium channels. These are membrane channels somewhat especial - they are opened at reduction energy resource, in particular ATP, in cells. Their activation has strong defensive importance, particularly under hypoxia and ischemia of tissues, and is one of main endogenous a mechanism of protection of the cells. At hypoxia and ischemia of myocardium, activation of ATP-sensitive potassium channels results because of a reduction in a number of energy substrates and serves a strong endogenous of mechanisms of cardioprotection. What turned out to be, open these channels possible and pharmacological way, by means of their openers. To pharmacological facility, which open the potassium channels pertains the new fluorine-containing openers flocalin and tioflocalin, which and is an objects of our studies. Purpose of our work was a study of influence of flocalin and tioflocalin on the calcium-induced mitochondrial pore (MPTP) opening.

Materials and methods. Experiments were conducted on adult Wistar rats. Animals were kept on a standard vivarium diet. Hearts were removed from decapitated rats, washed with cold 0.9% solution of KCl (4°C). Mitochondria were isolated by differential centrifugation [Sahach et al., 2004].

Result. In experiments *in vitro* on the mitochondria isolated from rat's heart we studied the effects of openers of ATP-sensitive potassium channels (K_{ATP} -channels), flocalin and tioflocalin, on the calcium-induced MPTP opening. The flocalin and tioflocalin caused characteristic for activation K_{ATP} -channels moderate mitochondria swelling, which prevented a specific inhibitor of 5-hydroxydecanoate that allowed identification of these compounds as pharmacological of the mitochondrial K_{ATP} -channels openers. We found that concentration-dependent inhibition effects (10^{-7} to 10^{-4} M) of flocalin (with $IC_{50}=50$ μ M) and tioflocalin (with $IC_{50}=2,7$ μ M) on Ca^{2+} -induced mitochondrial swelling (MPTP opening) in the heart characterized more powerful cardioprotective action of the latter. It was shown that the administration of these compounds in experiments *in vivo* decreased the sensitivity of the MPTP opening to Ca^{2+} . Thus, under physiological conditions the activators K_{ATP} -channels probably related to the membrane-stabilizing effects, thereby effectively increasing organelles resistance to the inductor of MPTP - Ca^{2+} .

Conclusion. The results obtained allowed to characterized role of new fluorine-containing openers flocalin and tioflocalin as *cardioprotectors* and regulators of the MPTP formation in the heart, indicated their anti-ischemic and *anti-apoptotic* effects that can be used in order to correct the mitochondrial dysfunction under pathological conditions of the cardiovascular system.

Key words: flocalin, tioflocalin, K_{ATP} -channels, mitochondrial pore, heart, rats.

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THE OXIDATIVE STRESS AND PROTEOLYTIC BALANCE OF SALIVARY GLANDS TISSUES UNDER CONDITIONS OF THE HYPERGASTRINEMIA AND IT'S CORRECTION BY MELANIN

Introduction. It is known, that long decrease in gastric secretion leads to the development of hypergastrinemia and to pathological changes in digestion organs. Very important there is a search of ways to correction of these undesirable consequences. Application of melanin is one of such ways.

Objective. The aim of the study was to prove the feasibility of melanin using for prevention of oxidative stress development in salivary glands at long omeprazole-induced hypergastrinemia.

Materials and methods. Experiments are executed on 35 rats-males of line Vistar, weight 180-250g. Animals within 28 days entered omeprazole (14 mg/kg of weight) and melanin (5 mg/kg of weight) together and separately. Development of the hypergastrinemia verified by the maintenance gastrin in blood plasma of rats ($59,0 \pm 35,5$ pg/ml, in comparison with investigated animals – $170,7 \pm 90,7$ pg/ml). In the homogenate of salivary glands defined activity of catalase, superoxide dismutase and the maintenance of TBA-reactants.

Results. We determined, that activity of catalase under conditions of hypergastrinemia was 1,47 times less, than intact rats, and the activity of superoxide dismutase – 1,66 times. Also the hypergastrinemia led to increase of the maintenance of TBA-reactants 1,39 times.

Melanin is a ubiquitous natural pigment found in most organisms (spiders are one of the few groups in which it has not been detected). Human skin is repeatedly exposed to ultraviolet radiation (UVR) that influences the function and survival of many cell

types and is regarded as the main causative factor in the induction of skin cancer, behaving like a sun umbrella for the our cells.

We determined, that activity of catalase under conditions of correction by melanin was 1,27 times more, than without correction, and the activity of superoxide dismutase – 1,49 times. Also correction of the hypergastrinemia by melanin led to decrease of the maintenance of TBA-reactants 1,23 times.

In the tissues of the salivary glands general proteolytic activity in the 28-day put omeprazole increased to 1.17 times, and under correction using melanin general proteolytic activity on day 28 of the experiment was significantly decreased compared with rats without correction 1.15 time. Also correction of the hypergastrinemia by melanin led to the increase of the inhibitors of the general proteinases maintenance 1.1 times more.

Conclusion. So, under conditions of long omeprazole introduction pathological changes in salivary glands tissues appear: the intensification of free-radical oxidation and proteolytic disbalance. Experimental correction by melanin promotes normalisation of pathological changes in salivary glands of rats during long introduction of proton pump inhibitor because of free-radical oxidation and proteolytic processes are oppressed.

Key words: salivary glands, omeprazole, hypergastrinemia, oxidative stress, proteolysis, melanin.

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THE INFLUENCE OF THE ORGANOSPECIFIC PEPTIDES ON THE PROTEOLYTIC AND FIBRINOLYTIC ACTIVITY IN KIDNEYS UNDER THE CONDITIONS OF RHABDOMYOLYTIC ACUTE KIDNEY FAILURE

Introduction. The disturbances of the proteolytic system are among the non-specific mechanisms underlying the pathogenesis of many diseases. Disorders of the balance between degradation and synthesis of intracellular proteins lead to the disturbances of the cell stability and affect the functioning of cell metabolism and transcription regulation. Most intracellular proteins are degraded by the ATP-dependent ubiquitin-proteasome system (UPS) [Lecker, Mitch, 2011]. In the kidney, the UPS regulates the turnover of transporters and signaling proteins [Rajan, Mitch, 2008], controls the number of the epithelial sodium channels and erythropoietin production in pathology. Fibrinolytic activity of kidneys depends on the urokinase synthesis by the proximal tubules and declines in case of injury of this part of nephron [Khomenko, 2013].

Endogenous oligopeptides show the wide spectrum of biological activity, regulate the processes of cell growth and development [Khavinson, Solovyov, 2012]. It was estimated, that pineal oligopeptide epitalon stimulates the expression of plasminogen and urokinase resulting in normalization of fibrinolysis in different pathological conditions [Kuznik, 2013]. The purpose of our research was to study the influence of the organospecific peptides (polipeptide kidney extract, synthetic kidney oligopeptides T-31 (Ala-Glu-Asp), T-35 (Glu-Asp-Leu) and pineal tetrapeptide epitalon (Ala-Glu-Asp-Gly)) on the proteolytic and fibrinolytic activity of rats' kidney tissue under the conditions of rhabdomyolytic acute kidney failure (AKF).

Material and methods. Forty-two non-linear adult white rats were divided into six equal groups (n=7): I group - control, II group – modeling of rhabdomyolytic AKF by intramuscular injection of 50% glycerol (8 ml/kg), III group - glycerol and polypeptide kidney extract (300 µg/kg), IV group - glycerol and oligopeptide T-35 (3 µg/kg), V group - glycerol and oligopeptide T-31 (3 µg/kg), VI group - glycerol and epitalon (7 µg/kg). Kidney extract and oligopeptides were administered during seven days before glycerol administration. After 24 h of glycerol administration kidney

samples were collected. Proteolytic activity of kidney tissue was determined by azoalbumin lysis (proteolysis of low molecular weight proteins (LMWP)), azocasein lysis (proteolysis of high molecular weight proteins (HMWP)) and asokol lysis (proteolysis of collagen). Fibrinolytic activity was determined by asofibrin lysis. Data were compared by SPSS Statistica 17.0 software using Student's *t*-test and Mann-Witney U-test at $p \leq 0.05$.

Results. Development of AKF was characterized by the decrease of total fibrinolytic activity (TFA) due to significant decrease of enzymatic fibrinolytic activity (EFA) by 3.4-fold comparing with control, provoking the development of urinary thrombosis and decrease of the filtration function. Administration of polypeptide kidney extract significantly increased EFA by 7.2 times; use of T-35, T-31 and epitalon increased this index by 6.0, 6.9 and 4.6 times, respectively. Amelioration of EFA resulted in increase of the TFA by 1.5 times in III and VI group of animals, and by 1.7 times in IV and V group as compared with untreated animals. It's probably caused by the protective influence of peptides on the proximal tubular cells and maintenance of urokinase synthesis.

Administration of peptides affected the proteolysis in kidney tissue. AKF development was accompanied with the decrease of collagen proteolysis by 1.4 times, which is the pathogenic factor of the chronization of kidney pathology. Significant decrease of LMWP proteolysis by 1.9-fold was also observed. Polypeptide kidney extract increased both LMWP proteolysis and collagen proteolysis by 1.2 times. Oligopeptide T-35 significantly increased these indices by 1.9 times. Use of T-31 increased LMWP proteolysis and collagen proteolysis by 2.1 and 1.9 times respectively, comparing to AKF group. Epitalon increased LMWP proteolysis by 1.7 times, collagen proteolysis by 1.3 times. All peptides showed the tendency to increase the proteolytic activity relative to HMWP.

Conclusion. Results of the research evidence the ability of organospecific peptides to normalize the fibrinolytic and proteolytic activity of kidneys under the conditions of rhabdomyolytic acute kidney failure. More significant effect is observed for kidney peptides indicating their tissue specific action.

Key words: acute kidney failure, organospecific peptides, fibrinolysis, proteolysis.

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**STUDY OF INFLUENCE OF NONIONIZING RADIATION ON
POLYMORPHISM OF THE TUBERCULOSIS CAUSATIVE AGENT IN THE
BLOOD SYSTEM OF THE BIOLOGICAL MODEL**

Introduction. The problem of tuberculosis is very urgent in Ukraine today. It is important for the modern science to study morphological changes of the TB causative agent influenced by different environmental factors. The work objective is to study polymorphism of the TB causative agent in the blood system influenced by nonionizing radiation in infected animals.

Materials and methods. The experiment involved 40 Chinchilla rabbits that were administered 0,1 mg/ml of *Microbacterium bovis* by intraperitoneal injection. The animals of the experimental group were irradiated with an alternating magnetic field.

Results. Examining the blood smears on the 100th day we observed formation of lemon-shaped cells that could be seen in the main and control groups with equal frequency. In 18 (90%) rabbits of the main group coccoid formations inside the lemon-shaped cells were observed. In the control group such changes were revealed in 10 (50%) rabbits. In 15 (75%) rabbits from the main group the number of inclusions was more than 10 per one erythrocyte and there were only 6 (30%) such rabbits in the control group. Damaged erythrocytes were observed in 16 (80%) cases in the main group and in 8 (40%) cases in the control group.

Conclusion. Electromagnetic waves (extremely low-frequency alternating pulsed magnetic field with frequency of 8 Hz, intensity of 100 V/m) increase the

reproductive activity of the TB causative agent during intracellular development in the blood system. In the main group 18 (90%) rabbits had coccoid formations, in the control group – 10 (50%) animals. At that, the number of intracellular formations in the main group was more than 10 in 15 (75%) animals and in the control group – in 6 (30%) rabbits. Electromagnetic waves change physical properties of the erythrocyte membrane (elasticity, fragility) in the animals infected with *Mycrobacterium bovis*. The erythrocyte fragility was higher – 16 (80%) > 8 (40%) – in the group of rabbits influenced by the electromagnetic field.

Key words: *Mycrobacterium bovis*, experimental tuberculosis, polymorphism, electromagnetic field.

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**DYNAMICS OF LOCATION DENSITY CHANGES AND CORTEX
CELLULAR MORPHOMETRIC PARAMETERS OF THE TEMPORAL
PART OF THE BRAIN IN CASE OF CAROTID ISCHEMIA-REPERFUSION
IN RATS WITH EXPERIMENTAL DIABETES MELLITUS**

Introduction. Topicality of the problem of diabetes mellitus (DM) is caused both by its considerable extent and the fact that this pathology is the basis for development of comorbid diseases and complications, early disability and mortality. This pathology increases in several times the probability of ischemic stroke and its more severe course. Our preliminary examination showed that comorbid effect of diabetes and ischemia-reperfusion of the brain caused apoptotic changes of neurons and glia of the

cerebral cortex in various parts of the brain hemispheres, and their intensity depended on the duration of reperfusion period.

Objectives: to study the dynamics of changes of the location density and morphometric condition of neurons, glia and apoptotic cells of the cerebral cortex in the temporal part of the brain hemispheres in male rats with DM complicated by ischemic-reperfusion lesion of the brain.

Materials and methods. The research was conducted on 66 nonlinear albino male rats of the control group and those with streptozotocin-induced DM. The latter was simulated by a single intra-abdominal streptozotocin injection given to two-month animals in the dose of 60 mg/kg of the body weight. The part of animals from the control group and those with three-month DM experienced 20-minute bilateral carotid ischemia, simulated by 20-minute application of clips on both general carotid arteries in the middle cervical access under intra-abdominal anaesthesia. After that the blood flow along the vessels was renewed to achieve reperfusion. To study early consequences of ischemia-reperfusion a part of animals was isolated from the experiment 1 hour after reperfusion period was over, and the rest – on the 12th day. In the cortex of the temporal part of the brain hemispheres the following characteristics of the nerve, glial and apoptotic cells were detected: density (the number of cells in 1 mm² of the cerebral cortex cut) and a relative density (%) of distribution of certain cellular classes, their square (mkm²), coefficients of shape and elongation.

Results. The dynamics of effects of incomplete global ischemia-reperfusion of the brain on the density of location and morphometric parameters of the neuro- and gliocytes of the cerebral cortex in the temporal part of the brain in rats afflicted with diabetes mellitus and without it has been studied. The location density of nerve cells was found to be 9% lower in animals without diabetes 20 minutes after carotid ischemia; nerve cell density was 36% lower, gliocytes increased in 1,6 times and apoptotic cells density was 5 times higher on the 12th day of post-ischemic period. In rats afflicted with diabetes mellitus the density of nerve and glial cells became 15% and 26% lower respectively, and the density of apoptotic cells in 2,1 times increased in this part of the brain. In animals with streptozotocin-induced diabetes in the late

period of ischemic-reperfusion lesion of the brain the location density of nerve cells became 11% lower than those of diabetic indices, and glial and apoptotic cells – in the dynamics of observation.

Conclusions. After 20-minute carotid ischemia with one hour reperfusion the location density of nerve cells decreases in the cortex of the temporal part of the brain hemispheres; on the 12th day of the post-ischemic period the density of the nerve and glial cells decreases and the density of apoptotic cells increases. In both periods of observation morphometric parameters of nerve cells are broken. In animals with three-month experimental diabetes the location density and percentage of nerve and glial cells in the cortex of the temporal part of the brain hemispheres decreases and apoptotic ones – increases. In animals with streptozotocin-induced diabetes during the late period of ischemic-reperfusion brain lesion the location density of nerve cells decreases as compared with diabetes, and glial and apoptotic cells – in the dynamics of observation. Diabetes mellitus modifies the reaction of morphometric parameters of neuro- and gliocytes on carotid ischemia-reperfusion.

Key words: brain, ischemia-reperfusion, diabetes mellitus, neurons, glia, apoptosis.

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**FEATURES OF THE CONNECTIVE TISSUE METABOLISM IN
EXPERIMENTAL DIFFUSE ISCHEMIC NECROTIC CARDIOSCLEROSIS
IN RATS WITH DIFFERENT RESISTANCE TO HYPOXIA**

Introduction. The pathology of the cardiovascular system is the major health and social problem, because it takes the first place in the structure of morbidity and mortality [Lopez, 2006]. The special attention is focused on the research of diagnostic markers of degradation and reparation of myocardial tissue, which would reflect the dynamic changes in the myocardium and were predictors of prognosis the diffuse cardiosclerosis. The purpose of this investigation was to determine the changes of the content of protein-bound oxyproline in blood as a diagnostic marker of metabolic activity of collagen at the experimental diffuse ischemic necrotic cardiosclerosis in the rats of different resistance to hypoxia.

Materials and methods. The experiments were done on 80 laboratory white male rats (190-250 g). The experimental animals were divided into 3 groups according to their different resistance to hypoxia [Berezovskyi, 1975; Markova, 1998]. We used the model of experimental diffuse ischemic necrotic cardiosclerosis which included adrenaline and calcium mechanisms of the cardiomyocytes necrosis in rats with different resistance to hypoxia. The investigations were based on the changes of concentration of protein-bound oxyproline in blood serum at 7, 14 and 30 days after the modelling pathology. Histological research was done at 30 days after the modelling pathology. Statistic research was done in Statistic department of SHEI «Ternopil State Medical University by I.Ya. Horbachevsky».

Results. Histological research confirmed the active growing of the connective tissue in myocardium at 30 days after the modelling pathology. We revealed the presence of focal cardiosclerosis, perivascular fibrosis, hyperelastosis of the inner membrane of vessels, hypertrophy of cardiomyocytes, diffuse proliferation of connective tissue, signs of heart failure.

Conclusion. The development of the experimental diffuse ischemic necrotic cardiosclerosis at all times of observation is accompanied by metabolic imbalance in the connective tissue of the heart, and argued by the increasing of oxyproline level in blood serum of animals with different resistance to hypoxia. The intensity of metabolic imbalances in diffuse connective tissue elements is the highest in the low resistant animals to hypoxia. The scientists should consider the presence of

cardiosclerotic process and pathological processes in the liver and kidneys due to development of heart failure for interpretation of the oxyproline content in blood serum.

Key words: heart, oxyproline, diffuse cardiosclerosis, hypoxia.

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REPROGRAMMING OF EPITHELIAL NUCLEI AS A BASIS OF GASTRIC PHENOTYPE MODIFICATION

Summary. The role of intestinal differentiation transcription factor CDX2 in the reprogramming of gastric epitheliocytes was established on the basis of its expression in material of gastric mucosa biopsies. Taking into account of CDX2 expression intensity the diagnostic algorithm of gastric intestinal metaplasia for further tactics of patients management was proposed.

Key words: reprogramming, gastric phenotype, intestinal differentiation transcription factor CDX2, metaplasia.

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RESEARCH OF DYNAMICS OF REGENERATIVE PROCESSES IN THE WALL OF THE UTERINE TUBES IN THE EXPERIMENT

Introduction. Effectiveness of surgery to remove adhesions intratubarnih was quite low. The main complication after plastic surgery on the fallopian tubes is postoperative obliteration of the lumen. It is therefore important to obtain data on the regeneration processes occurring in the wall of the fallopian tubes during plastic surgery to prevent further formation of adhesions.

Materials and methods. Experimental study was performed on 15 adult mongrel dogs females aged 2 to 5 years old, weighing 15 to 20 kg in the intermenstrual period of the menstrual cycle. Animals were divided into control and experimental groups. Lower median laparotomy was performed. Mobilized uterine horn dog. Serosa wall uterine horns dissected longitudinal cut. Muscle membrane dissected bluntly. The distance between the wound edges is equal, on average, 0.5 cm length was cut from 1 to 2 cm, while the mucous membrane of the uterine horn is not incised. The plot is not sutured incision.

Results. As a result of our study revealed that, macroscopically, uterine horns had a pink color, were placed in the abdominal cavity free. Vessels in the serous tissue of uterine horn at the incision were moderately full-blooded. Was formed as a connective tissue scar that distorted wall uterine horn, whereby the lumen uterine horn was significantly narrowed. On microscopic restoration of wall uterine horn dog while maintaining the integrity of its mucosa occurs, in general, on the 30th day of the postoperative period, reflecting the high regenerative capabilities wall tissues of the uterine horns dog. But formed a connective scar deforms wall uterine horn, whereby uterine horn lumen narrows considerably, and in the corners of the uterus of animals undergoing significant morphological changes that may lead to further obliteration of the lumen of the uterine horn, requires a separate pilot study and develop new methods of restoration and prevention development of tubular obstruction.

Conclusions. Histological examination of the uterine horns dogs removed at different times of the postoperative period showed high regenerative capabilities of the components of the wall of the uterine horn of animals, while maintaining the integrity of the mucosa of the uterine horn. Disruption homeostatic regulatory mechanisms in the wall of the uterine horn dogs leads to a compensatory mechanism that wall defect healing proceeds in the uterine horn with an increase in pathological events of inflammation, which causes proliferation and alterations in fibrotic connective tissue scar, and narrowing of the uterine horn dog. Obtained in the study of regenerative processes data on the morphological changes in the wall of the uterine horn dogs are important for the development and morphological study of new methods of surgical correction of tubal obstruction.

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

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WAYS TO ACHIEVE ADEQUACY EPIDURAL ANESTHESIA / ANALGESIA IN THE EXPERIMENT

Introduction. *Objective* of the study was to determine the optimal concentration of the bupivacaine for peridural anesthesia / analgesia with positive effects to splanhletic hemodynamics in experiment on dogs for recommendations for clinical testing.

Materials and methods. An experimental study was performed in 2011 on three mongrel dogs weighing males $11 \pm 0,5$ kg, aged 5-6 years. When working with laboratory animals followed the recommendations of the European Commission to

conduct biomedical research using animals and methodological recommendations of the State Pharmacological Center MDH Ukraine. One way to assess blood flow in the experiment is a lifetime comparative microscopy of microcirculation of mesentery or qualitative characteristics by counting the number of capillaries in histological tissue specimens mesentery and intestine. The disadvantage of this method is that the observation does not change the quantitative characteristics of the capillary circulation, and to obtain qualitative histological characteristics micropreparations need to bring out the animal from experiment. We offer a way to assess blood flow in the intestine, which, depending on changes in the concentration of local anesthetic injected in peridural space allow qualitatively assess changes in microcirculation.

Results. Evaluated splanhetic hemodynamics and adequacy of anesthesia / analgesia by determining the rate of capillary perfusion of erythrocytes in the mesentery of the dog. Investigated the effect of 0.1%; 0.25%, 0.5% bupivacaine concentrations in peridural anesthesia on velocity of capillary perfusion. Found that the concentration of 0.25% bupivacaine injected into epidural space optimally improves microcirculation in the mesentery of the intestine, so this concentration is recommended for clinical testing as a component antinotseotseptic protection during operation in abdominal surgery.

Conclusions. In the future, further development is proposed to use peridural analgesia of 0.25% concentration of bupivacaine for antynotseotseptyc protection in multimodal anesthesia / analgesia during operation in abdominal surgery.

Key words. Epidural anesthesia / analgesia in the experiment, the concentration of 0,25% bupivacaine.

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MONITORING OF CARDIOPROTECTIVE EFFECTS OF DERIVATIVE 3,2'-SPIRO-PYRRHOL-2-OXINDOLE COMPOUND R-86 IN THE COURSE OF MODEL CARDIAL ISCHEMIA WHEN DIFFERENT DRUG ADMINISTRATION IS USED

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 Derivative 3,2'- Spiro-Pyrrhol-2-Oxindole is a perspective biologically active substance that has antihypoxic and cerebroprotective action.

Objectives. To evaluate protective characteristics of Derivative 3,2'-Spiro-Pyrrhol-2-Oxindole Compound R-86 in conditions of acute myocardial ischemia in accordance with a dynamic of electrocardiogram changes.

Materials and Methods. Cardioprotective effects of Derivative 3,2'-Spiro-Pyrrhol-2-Oxindole Compound R-86 have been evaluated when pharmacoprophylactic administration was used on a model of diathermocoagulation myocardium necrosis (DCMN) and therapeutic administration on a pituitrin-isadrine myocardial infarction.

Results. During experiments on rats it has been found that Derivative 3,2'- Spiro-Pyrrhol-2-Oxindole Compound R-86 (10 mg/kg intragastric administration) has cardioprotective action that manifested itself as probable reduction of segment ST magnitude concerning a control pathology group not only by pharmacoprophylactic administration, but also by therapeutic one on two different as for genesis models of myocardial ischemia – diathermocoagulation myocardium necrosis and pituitrin-isadrine myocardial infarction. As for degree of cardioprotective effect Compound R-86 injected preventively in conditions of diathermocoagulation myocardium necrosis was as good as Cordarone, Mexidolum and Thiotriazolin, probably better than Corvitin in the course of rats' pituitrin-isadrine myocardial infarction treatment. Investigated Derivative 3,2'- Spiro-Pyrrhol-2-Oxindole is a perspective biologically active substance for the further in-depth study of its cardioprotective characteristics.

Key words: Derivative 3,2'-Spiro-Pyrrhol-2-Oxindole, acute cardial ischemia, cardioprotective effect.

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THE PECULIARITIES OF THE EXPRESSION OF TLR2 AND TLR4 ADIPOCYTES OF PARAPANCREATIC CONNECTIVE TISSUE OF EXPERIMENTAL DIABETES MELLITUS

Introduction. To study the influence of experimental diabetes mellitus on the expression of TLR2 and TLR4 by adipocytes of parapancreatic connective tissue in Wistar line rats.

Materials and methods. The research was performed on 60 males rats of Wistar line with weighing 115-135 grams, which were divided into 5 experimental groups about 12 rats in each group: control rats - group 1, rats with 3-week experimental streptozotocin-induced in diabetes (ESD1) - group 2, rats with 3-week experimental streptozotocin-nicotinamide-induced diabetes (ESD2) - Group 3, rats with a 3-week ESD1 – the 4-th group and ESD2 group – the 5-th group, which were injected metformin in a dose of 50 mg/kg daily during 3 weeks starting from the first day of the diabetes mellitus induction. For induction ESD1 streptozotocin (STZ) was injected intraperitoneal to the rats in a dose of 50 mg/kg dissolved into 0.5 ml of 0.1 M citrate buffer (pH 4.5) before injection. The induction of ESD2 STZ was realized in a dose of 65 mg/kg with a previous (15 min.) nicotinamide intraperitoneal injection in a dose 230 mg/kg).

The population structure TLR2⁺ and TLR4⁺ adipocytes was studied on groups of the analysis of a serial histological sections and data of their morphometric and densitometric characteristics. Processed histological sections were examined by a computer program Image J. The density of TLR on the surface of adipocytes was determined taking into account the fluorescence intensity of identified immune positive cells and nonspecific fluorescence of the drug. With justification of cell fluorescence was calculated the corrected cells fluorescence.

Results. The development of ESD1 increased the number of TLR2⁺ - and TLR4⁺ - adipocytes in 2.5 times and on 95%, respectively, increased the density of TLR2⁺ - receptors on the surface of adipocytes all grades in 9-23% and differently affected to the density of TLR4⁺ - receptor. Induction of ESD2 increased number of TLR2⁺ - adipocytes on 83%, did not affect the number of TLR4⁺ -adipose cells, increased density of TLR2⁺- and TLR4⁺ -receptors on the membrane in large adipocytes. Injection of metformin to diabetic rats reduced total number of TLR2⁺ -adipocytes on 16% with ESD1, on 22% with ESD2, TLR4⁺ -adipocytes on 36% (ETSD1). This was accompanied by a decrease of the density of TLR2⁺- and TLR4⁺- receptors on the surface of adipose cells.

Conclusions. The increasing of number of TLR2⁺- and TLR4⁺- adipocytes in parapancreatic connective tissue and density of TLR2⁺- and TLR4⁺-receptors on their surface in the conditions of ESD induction indicates about possible increase in antiinflammatory signaling and occurs one of the factors that may support the progression of disease. Our findings demonstrate the ability of metformin to reduce the density of TLR2⁺- and TLR4⁺- receptors on the surface of adipose cells and thus regulate extent of inflammation in adipose tissue.

Key words: experimental diabetes mellitus, adipocytes, TLR2, TLR4.

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**THE APPROVING OF NECESSITY OF DEVELOPMENT NORMATIVE
MORPHOFUNCTIONAL PARAMETERS OF REPRODUCTIVE HEALTH
OF TEENAGE GIRLS AT DIFFERENT STAGES OF PUBESCENCE**

Summary. The review of data of different literature concerning medical "norm" is carried out. Here approved the necessity of development normative morphofunctional parameters of reproductive health of teenage girls at different stages of their pubescence. Definitions of individual normative parameters of the human body in modern medicine in most studies are conducted without regard to ethno-territorial, individual-typological, age and constitutional characteristics of women. Today extremely important is to study the complex structure of reproductive system of healthy women in Ukrainian ethnic group, of different ages with constitutional peculiarities of the organism. The results will be used in further studies as a data bank in the study of various diseases of the reproductive system.

Key words: reproductive health, junior age, definition of norm, level of hormones, constitution, somatotype.

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STUDY OF ANTIMICROBIAL PROPERTIES OF POWDER COMPOSITIONS

Introduction. Opportunistic microorganisms play a very important role in the development of purulent-inflammatory diseases of skin. Complex treatment of wounds depends on taking into account phases of their pathogenesis. According to modern approaches complex methods of wound management using combinations of antiseptics and sorbents is a very important device.

The aim. The study of antimicrobial activity of powder compositions.

Materials and methods. Antimicrobial activity of 6 powder compositions with decamethoxine, metronidazole, polymethylsiloxane, silics in different content proportions was studied against *S. aureus* (n 5); *E. coli* (n 5); *C. albicans* (n 5). Minimal inhibitory concentrations (MIC), minimal bactericidal concentrations (MBcC) were studied by means of serial dilution method.

Results. High antimicrobial activity of composite powder compositions, containing decamethoxine (1,5 weight%), against strains of *S. aureus* (MBcC- 3,5±0,61 mkg/kg) and *E. coli* (MBcC-12,0±2,0 mkg/kg) has been found in the research. According to the research of antifungal properties of antimicrobial powders we found that strains of *C. albicans* were sensitive to MBcC- 10,5±1,84 mkg/kg. Antifungal activity of decamethoxin was, a little bit potentiated, comparably to antiseptic's activity without sorbents.

Conclusion. Powder composition, containing decamethoxin (2 weight%) silics (28 weight%), polymethylsiloxane (55,5 weight%), zinc oxide (10 weight%), metronidazole (4,5 weight%), is optimal and provides sufficient antimicrobial effect against strains of microorganisms, causing infectious complications of wounds.

Key words: antimicrobial activity, decamethoxin, polymethylsiloxane, silics, powder composition.

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MORPHOLOGICAL CHANGES OF RATS' KIDNEYS AT THE MEDICAMENTAL AFFECTION WITH RIFAMPICIN AND ISONIAZID

Introduction. The medicamental affection of the kidneys takes the essential place in the structure of the morbidity and mortality of the population in the economic developed country. The medicamental affection of the kidneys is caused with a lot of medicine very often and 60% of it appears because of the antibiotics. Among all nephrotoxic antibacterial medicine the antituberculous preparation especially rifampicin and isoniazid take one of the first places.

The goal: to examine the morphological changes in the kidneys of the sexually immature rats at the medicamental affection with isoniazid and rifampicin and the correction with quercetin and tiotrizalin.

Materials and methods. The experimental research was conducted on the 50 non-linear white laboratorial sexual immature rats-male with the beginning mass of 50-60gr. The research of the medicamental affection of the kidneys with antituberculous preparations was conducted with the way of the ingastral introduction of rifampicin and isoniazid three times a week for 29 days. The pathogenetic correction was conducted with the way of ingastral introduction with rifampicin and isoniazid quercetin and tiotrizalin. The conduction of the histological preparations was according to the common methods which allowed us to study hard and detailed the pathomorphological peculiarities of the changes in the kidneys.

Results. It was established that at the action on the organism the antituberculous preparation the structure of nephritic balls was unaltered but there was an expressed swelling of the capsule of Shumlanskyi-Bouman, the dilation of capillary of the choroid glomus, swelling of the endotheliocytes. The walls of the renal arteries

were getting thick because of plasmatic peccolation that caused diffuse medium swelling of the interstition. The diffuse venous capillary plethora, mainly cerebral part, which combined with erythrostatics. In many distal canals the necrosis had subtotal character, the epithelium had a shape of homogeneous amorphous non-nuclear mass. The clear space was full with cast-off dyed epithelium cells, fibrin conglomerates, leukocytes and erythrocytes.

Conclusion. The found changes of the renal corpuscles and the renal tubules can be considered valuable morphological criteria, which characterize the affection of the renal parenchyma in the conditions of the toxic affection with the antituberculous agents and the correction with quercetin and tiritiazolin. Tiritiazolin decrease the disorder of the blood supply of the kidney and accompanies the fast restoration of the epithelocytes of the proximal and distal tubules.

Key words: medicamentous affection of the kidneys, sexual immature rats, antituberculous preparations.

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INDICATORS OF FINAL DIASTOLIC AND SYSTOLIC VOLUME OF THE LEFT VENTRICLE, PERCUSSIONS AND CARDIAC OUTPUT, EJECTION FRACTION AND HEART AND ATTACK INDEX IN HEALTHY MEN AND WOMEN PODILLYA ACCORDING TO THE DATA OF ECHOCARDIOGRAPHY

Introduction. Study of the cardiovascular system at the present stage of development of physiology require to express all its characteristics quantitatively. Only this can

uniquely judge the value of the functional items in the system, compare its individual parts, to determine the effectiveness of regulation, a range of deviations in the development of pathological processes.

Aim of our work – establish normative values and echocardiographic features of diastolic and systolic indices of left ventricular volumes, shock and cardiac output, ejection fraction, shock and cardiac index in healthy men and women of Podillya of the first adulthood and different age groups.

Materials and methods. On the basis of research center of Vinnitsa National Medical University named after Pirogov for detailed ultrasound examination of the heart was selected 109 practically healthy men aged from 22 to 35 years and 158 women aged from 21 to 35 in the third generation residents of Podolsk region of Ukraine.

Echocardiographic studies were performed by the conventional method [Шиллер, Осипов, 2005; Рыбакова и др., 2008] in three standard positions in M and D-modes with transthoracic access on device "Ultramark-9". We conducted determination of the final diastolic volume of the left ventricular and final systolic volume of the left ventricular. Shock index was determined by the formula: $SI = SV / S$, where SI - stroke index (l/m^2); SV - stroke volume (L); S - body surface area (m^2). Stroke volume was determined by the formula: $SV = EDLV - EDLVV$, where SV - stroke volume (ml); EDV - end diastolic left ventricular volume (ml); EDLVV - end systolic left ventricular volume (ml). Cardiac index was determined by the formula: $CI = CMV / S$, where CI - cardiac index ($L/min/m^2$); CMV - circulatory minute volume (L); S - body surface area (m^2). Ejection fraction was determined by the formula: $EF = SV / EDV$, where EF - ejection fraction (%); SV - stroke volume (ml); EDV - end diastolic volume (ml). Statistical analysis of the results carried out in the statistical package "STATISTICA 6.1" (belongs to SRC VNMU named after Pyrohov, license № BXXR901E246022FA) using parametric and nonparametric methods of assessment the results.

Results. Established confidence limits and percentile scope values of echocardiographic indices of the final diastolic and systolic left ventricular volumes,

shock and cardiac output, ejection fraction, shock and cardiac index for men and women overall group and different age groups. In practically healthy men and women of Podillya of the first adulthood among age peculiarities of indicators of the final diastolic and systolic left ventricular volumes, shock and cardiac output, ejection fraction, shock and cardiac index only in women 26-35 years end diastolic volume of the left ventricle was significantly greater compared with women aged 21-25 years. For most of the studied echocardiographic parameters set significantly higher values in general men and different age groups compared with women of these groups. Further studies of echocardiographic parameters in healthy men and women will expand and complement the theoretical foundations for the study of developmental physiology and anatomy of human heart, functional diagnostics, therapeutic and surgical cardiology.

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**CLINICAL CHARACTERISTIC OF BOYS AND GIRLS OF PODOLIA,
PATIENTS OF ERITEMATO-SQUAMOUS AND LICHENOID FORM OF
LIMITED ATOPIC DERMATITIS**

Introduction. The objectivization of the diagnostics of atopic dermatitis is actual and possible by determination of rating row of clinical signs and selection of criteria with the most specificity for certain age, gender and population categories of patients. The purpose of work: to learn the features of motion of AD for boys and girls of the Podillia region of Ukraine by the analysis of them clinical laboratory indices and to define the regional rating row of main and additional diagnostic criteria of AD.

Materials and methods. 143 teenagers (64 boys and 79 girls) were examined at the age from 12 to 17 years old, patients with different clinical morphological forms of AD, who in the third generation were habitats of Podillia and were on the register of ambulatory observation of children's medical establishments of Podillia region of Ukraine. The verification of the AD's diagnosis was spent in accordance with diagnostic criterions of J.M. Hanifin and G. Rayka [1980]. For the objective estimation of the hardness of passing and the damaged square the point-rating system in accordance with the scale SCORAD [Stadler et al., 1993] was used. The distribution of the main and additional criterions of atopic dermatitis (AD) of the boys and girls, the patients with erythematic squamosal (AD-E) and lichenoid (AD-L) forms of limited AD were estimated. The distribution of the indices of harmonized scale of the symptoms of AD (SCORAD) (erythema, edema/intensity of papules, scab, excoriation, lichenification, dry skin) and the quantitative indices of the unified scale of the symptoms of AD (SCORAD) and the level of IgE in the saliva (the damaged square, average value of the subjective symptoms, SCORAD, the level of IgE in the saliva) of the patients on the limited AD of the boys and girls with the light and average stage of hardness were estimated. The level of general IgE in the saliva of the patients with atopic dermatitis was determined by the method of enzyme-linked immunoassay (the complex of analyses for enzyme-linked immunoassay of IgE in the serum and secretions LLC "Hema-medica" Moscow).

Results. The analysis of the received data by us which are connected with clinical aspects of the diagnostic signs of the atopic dermatitis in the Central region of Ukraine in comparison with the data from the East, South and West regions of Ukraine points to the regional peculiarities. For the Central region according with our data the limited AD, erythematic squamosal form and the light stage of the hardness of the disease most of all among the girls are characteristic.

Conclusion. The most reliable differences of clinical laboratory peculiarities of the limited AD concern to the objective symptoms and the quantitative indices SCORAD and it does not depend on the form and the stage of the hardness disease of the boys and girls from Podillia. In the most cases the both boys and girls with erythematic

squamosal form and the average stage of the hardness of the limited AD have more expressed manifestation of the objective symptoms and the quantitative indices SCORAD (with the exception of the expressed lichenification and the dry skin of the girls at the different forms of AD) than at the lichenoid form and the light stage of the disease. The manifestation of the sexual demorphism and the additional criteria of AD and also the objective symptoms and the quantitative indices SCORAD and the level IgE in the saliva at the different forms and stages of the hardness of the limited AD are absent in the most cases or do not have systematic character.

Key words: limited atopic dermatitis, form, degree, clinical indicators, sexual dimorphism, IgE of saliva.

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**SYMPTOMS MORPHOLOGICAL SOLITARY KIDNEY IN DOGS IN
EXPERIMENTAL URETEROHYDRONEPHROSIS UNDER RESTORATION
URINE OUTFLOW USING PLASTIC URETER**

Summary. The study of morphological characteristics and possible ways of predicting the progression of loss of kidney function in hydronephrosis is an urgent problem urology. There are quite conflicting views about scientists hydronephrosis that occurs on the background of prolonged violation of the outflow of urine, no single methodological approach to the assessment of structural and functional changes in the kidneys and urinary tract and the development of adequate methods of surgical treatment. The paper presents the main morphological changes of the urinary

system in experimental hydronephrosis single kidney in the restoration of the flow of urine using plastic ureter ureter.

Key words: ureterohydronephrosis methods of surgical treatment of glomerular - tubular apparatus of the kidney , plastic, renal blood flow.

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DYNAMICS OF INDICATORS OF PH BALANCE BLOOD OF RATS WITH ACUTE CEREBRAL ISCHEMIA ON THE BACKGROUND OF INTRODUCTION OF 0.9% NA CL SOLUTION

Introduction. According to researchers, the main component of the program for the implementation of pharmacological cerebroprotective therapy in conditions of acute cerebrovascular accident (CVA) by ischemic type is its ability to inhibit the development and reverse the manifestations of disorders of acid-base balance that always accompany severe stroke.

As part of a comprehensive study of the effect of different infusion means on the brain in experimental CVA, the aim of this paper is to explore the dynamics of

indicators of acid-base balance of the venous blood of rats without treatment and during treatment with normal saline 0.9% solution of NaCl.

Materials and methods. The experimental model of ischemia-reperfusion (IR) was created in male rats by clipping both internal carotid arteries for 20 min under anesthesia of propofol (60 mg/kg). 0.9% solution of NaCl administered intravenously in catheterized femoral vein in dose 2.5 ml / kg, 2 times / day (5 ml / kg per day). The first introduction was performed 30 min after IR and then daily every 12 hours for 7 days. The control groups consisted of intact rats treated with 0.9% NaCl and animals with IR untreated.

Studies of acid-base balance was performed for 15 min after the puncture on the unit micro-Astup of "Medica Easy Stat, USA" firm. Main indicators were studied: pH, pCO₂ - partial pressure of CO₂; pO₂ - partial pressure of O₂; AB - the true bicarbonate; Sb - standard bicarbonate; RE - the deficit of buffer bases.

The study showed that in the control group (rats with IR untreated) after 96 hours after modeling CVA (4 day) were observed manifestations of mixed acidosis (metabolic and respiratory).

Results. Therapeutic introduction of 0,9% solution of NaCl to rats with CVA, in some way, contributed to the normalization of the studied parameters, although they had some differences in the degree of correction effects. At the 4-th day of observation against the background of a course of introduction to animals with cerebral IR 0.9% NaCl solution was registered a significant increase relative to the control group only one indicator of pathology - standard bicarbonate. Rest of indicators of buffer bases had only a tendency to normalization of their levels ($p > 0.05$). However, despite these positive changes in some parameters of acid-base balance, integrative criterion - deficit of buffer bases was present and was 168.4% which is an indication of only partial de-escalation of negative changes of acid-base balance that have taken place during the simulation IR.

Conclusions. Compared with untreated animals, pharmacotherapy of rats with model of cerebral ischemia of 0.9% NaCl solution to some extent helps to restore the dynamics of the acid-base balance in rats ($p < 0.05$). Therapeutic effect that was

received in the experiment of infusion therapy of izoosmolar 0.9% solution of NaCl is the basis for the study of the protective action of infusion drugs other groups in acute disorder of cerebral circulation.

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FREQUENCY OF CARIES INCISORS AND CANINES IN SOMATIC HEALTHY MEN FROM DIFFERENT ETHNO-TERRITORIAL REGIONS OF UKRAINE ACCORDING TO DENTAL EXAMINATION AND CONE-BEAM COMPUTED TOMOGRAPHY

Introduction. *Aim* of our work – set the frequency of caries of incisors and canines in somatically healthy men from different ethno-territorial regions of Ukraine according to the dental examination and cone-beam computed tomography.

Materials and methods. As a result of questioning more than 3,500 men aged 19 to 35 years selected 410 somatically healthy men in the third generation inhabitants of the respective environmentally friendly regions of Ukraine (North - Zhytomyr, Kyiv, Chernihiv and Sumy regions, South - Odessa, Nikolaev, Kherson, Zaporozhye region and Crimea, Central - Vinnytsia, Cherkasy, Kirovograd, Poltava and Dnipropetrovsk region; West - Volyn, Rivne, Lviv, Chernivtsi, Ternopil, Khmelnytsky, Transcarpathian and Ivano-Frankivsk region, East - Kharkiv, Donetsk and Luhansk region). All of them conducted: the study of dental status (full dental examination); cone-beam computed tomography (CT using Veraviewepocs 3D Morita) includes determining the status of the periapical tissues, crown and neck of the tooth (for hidden

cavities); statistical analysis of the results conducted in the package "STATISTICA 6.1".

Results. It was established that the frequency of lesions incisors and canines by surface caries on the upper jaw has higher values average for cutters from 6.9% to 13.3%, and for canines from 2.7% to 9.6%, with slightly higher values set according to the dental examination) than in the mandible (average for cutters from 0% to 5.6%, and for canines from 0.6% to 5.6%, with slightly higher values established according to the computer tomography).

The frequency of lesions of incisors and canines by average caries on the upper jaw has higher values average for cutters from 0 to 9.3%, and for canines 0 to 9.7%, with significantly higher values established according to the computed tomography) than in the mandible (average for incisors and canines from 0 to 2.8%, with slightly higher values established according to the computed tomography).

Frequency of absence caries of incisors and canines in the lower jaw has higher values average for cutters from 92.7% to 98.9%, and 91.7% of canines to 99.4%, with slightly higher values established by according to dental examination) than the upper jaw (the average for cutters from 80.0% to 90.3%, and 83.4% of canines to 97.2%, with slightly higher values and set according to the dental examination).

When comparing the frequency of lesions of teeth among different regions, the following statistically significant or trend differences were set:

incisors in the upper jaw - according to individual dental examination smaller values of surface caries frequency in West than in the North, South and East regions, and only the 21 tooth, more frequent absence caries in the West than in the Northern and Southern regions; according to computed tomography single frequency value smaller average caries in East than in the North, South and Central regions, and only for the 21-th tooth, more frequent absence of caries in East and West than in the North;

canines in the upper jaw - according to the dental examination mostly lower frequency surface caries in the Central than in the Southern and eastern regions and more frequent absence caries in the central and northern than in the Southern and Eastern regions; according to CT for the 13 tooth, more frequent surface caries in East than in the North

and more frequent absence of caries in the North than in the South and East regions, and for the 23 tooth decay more frequent in middle South than in the North, and, conversely, lower incidence of caries absence in the South than in the North; incisors in the mandible - according to the dental examination only for 42 tooth surface caries greater frequency in the Western than in the Central region and, conversely, the lower frequency of absence of caries in Western than in the Central region; according to CT only 42 tooth more frequent surface caries in Western than in the Central and Eastern regions and, conversely, the lower frequency of absence of caries in the Western than in the Central and Eastern regions, as well as 31 and 32teeth larger average frequency of of caries in the Western than in the Central region and only 32 for the first tooth, the lower frequency of absence of caries in the Western than in the Central region. mandibular canines - according to the survey of dental lower frequency of surface caries in the Central than in the Western region and only for the 33tooth, more frequent absence of caries in the Central than in the Western region; according to computed tomography lower frequency surface (for 43 tooth) and medium (for 33 tooth) decay in the central than in the western region and only for the 33 tooth, more frequent absence of caries in the Central than Western region.

According to CT in the upper jaw (except the 12 tooth) set larger value frequency for middle caries of incisors in the Central region and for the 21 tooth in the Northern region, and only for 23 tooth larger value caries frequency of average canines than in the dental examination.

Key words: caries, somatically healthy men, different regions of Ukraine, dental examination, computed tomography.

Clinical researches

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PATHOGENESIS OF CHRONIC OBSTRUCTIVE PYELONEPHRITIS : PLATELETS REACTIVITY

Introduction. Conservative treatment of chronic obstructive pyelonephritis (COP) might influence functional state of leukocytes, but whether it affects functional state of platelets and whether it further influences development chronic inflammation, remains unknown. The aim of the research was to evaluate the functional state of platelets and their role in COP pathogenesis.

Materials and methods. Research was carried out on peripheral blood of 52 patients with COP at the time of their admission before beginning of treatment. To evaluate platelets' functional state in vitro, the following agonists were used in EC₅₀ and subthreshold concentration: adrenaline, ADP, serotonin, platelets' activating factor (PAF). Platelets' aggregation was performed on aggregometer Chrono-Log (USA). All statistical analyses were performed using MedCalc (version 12.3). Differences were considered statistically significant if the p value was < 0.05.

Results. It was found that during COP, platelets' response was changed following not only adrenaline, but all other agonists (ADP, PAF, serotonin) stimulation, which implies existence of hypo- and hyperreactive platelets' phenotype. Among the reasons of platelets' hyporeactivity at the time of admission there might be decreased sensitivity of α_2 -adrenoreceptors, COX-1 inhibition related to NSAID intake. It was found that hyporeactive platelets' phenotype participates in realization of remission and relapse phases of COP. Notably, within each group of patients, platelets' reaction to ADP, PAF and serotonin (ST) was identical to that of adrenaline in terms of pattern of change (decrease or increase), though, it differed in its range. Thus, in hyporeactive group platelets' response to ADP in EC₅₀ corresponded to that of adrenaline, whereas response to PAF and serotonin was lower than that to adrenaline

by 24.4% ($p>0,05$) and 2.3 times ($p<0,001$) respectively. In hyperreactive group of patients platelets' response to specified agonists was higher than an established level of 55%, and their response can be summarized as $PA_{\text{adrenaline}}=PA_{\text{ST}}>PA_{\text{ADP}}=PA_{\text{PAF}}$. It was shown that, firstly, arachidonic acid-induced platelet aggregation was 2.3 times lower than in control group ($69,2\pm 10,2\%$), which implies initial inhibition of COX-1. Secondly, following increase in adrenaline concentration in incubation mixture up to $10\ \mu\text{M}$ (EC_{100}), there was a decrease in aggregation, but effect was much lower than in control ($97,6\pm 4,1\%$). This fact might reflect decreased sensitivity of α_2 -adrenoreceptors in patients with COP at the time of admission to hospital.

Conclusion. As prior COX-1 inhibition with aspirin did not decrease platelet aggregation, that an observed effect is connected to TxA2 production. Moreover, COX-1 inhibition did not bring down aggregation caused by ADP in EC_{50} .

Key words: platelets reactivity, pathogenesis, chronic obstructive pyelonephritis.

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**INDIVIDUAL STRESS - IMMUNOREACTIVITY IN BURN PROCESS AS A
DETERMINANT OF ADAPTIVE CAPACITY OF THE ORGANISM**

Summary. Actual direction of Clinical Pathophysiology is the prediction of adaptive capacity of the organism during the burn process. Established pathogenetic importance of adaptive and maladaptive personality types adrenergic organism immunoreactivity in the pathogenesis of burn process. Suggested ways to predict the nature of the clinical course of burn disease eyes and the possible development of its complications. Introduced statistical analysis allowed us to offer a criterial assessment of the nature of the clinical course of burn process personal stress index - immunoreactivity (IISIR), which detects the ratio of the reception of "active" T - lymphocytes to adrenaline and sodium hydroxybutyrate (excitatory and inhibitory neurotransmitter action) and adaptive state viddzerkalyuyue mechanisms of immune homeostasis (regulatory effect of stress and implement stress - limiting systems) .

Complicated nature of the clinical course of burn eye disease was found at the value of the index individual stress - imunoreaktivnoti ≤ 0.9 , and a value of more than the above index > 0.9 was observed for uncomplicated burn process (represented by the evidence base for X - Pearson criterion conjugacy skorinogovoyu scale. Determining the ratio of the individual patient's sensitivity to excitatory and inhibitory neurotransmitter action to evaluate the individual characteristics of stress - immunoreactivity particular patient , allows to predict the clinical course of burn process and the likelihood of developing its complications.

Key words: index of individual stress – immunoreactivity, clinic burn process.

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ROLE MICROELEMENT OF ZINC IN PATHOGENY OF THE LEYOMYOMA UTERUS AT WOMEN WITH POLYMORPHISM ALLELES OF GENES COLLAGEN 2 TYPE ALPHA 1 (COL2A1 6846C/A)

Introduction. The problem of good-quality tumoral formations of a uterus remains extremely actual in a consequence of growth of frequency of revealing of this pathology at patients of different age-grades, especially at women of reproductive age. A series of new concepts aetiology factors of occurrence and pathogenetic mechanisms of progress of growth leyomyoma of uterus is considered. One of them is research of a role of zinc and genetical factors of a connective tissue .

The purpose - Role research microelement zinc and molecular - genetical features in a pathogeny leyomyoma of uterus at women with polymorphic alleles a gene of collagen of 2nd type alpha 1 (COL2A1 6846C/A).

Materials and methods. 300 women of reproductive age are surveyed. Made quantitative definition of the maintenance of zinc in integral and menstrual blood, definition of alleles of a gene of collagen of 2nd type alpha 1 COL2A1.

Results. It is positioned that in bunch A frequency of normal homozygous genotypes C/C at investigated frequencies of polymorphism of gene COL2A1 6846C/A compounds 70,0 %. Homozygous polymorphic genotypes A/A in control bunch are defined in 3,3 %, heterozygous C/A - in 26,7 %. Indexes in control bunch did not fall outside the limits the population data for Europe strain.

Frequency of a polymorphic homozygous genotype (C/C) in bunch B-1 compounds 6,7 % of cases, a homozygous genotype (A/A) - 57,8 % (a difference with control bunch authentic - $p < 0,01$), heterozygous genotype (C/A) - 35,6 % accordingly.

Frequency of a homozygous genotype (C/C) in bunch B-2 compounds 7,4 % of cases, homozygous genotype A/A - 61,5 % (the difference with control bunch is authentic - $p < 0,01$), heterozygous C/A - 31,1 % accordingly.

Polymorphic variants of alleles of a gene of collagen of 2nd type alpha 1 (COL2A1 6846C/A, both homozygous and heterozygous after an allele A it is revealed in 93,3 % at women of bunch B-1 and at 92,6 % of bunch B-2.

The size of an interrelation of chances of development leiomyoma of uterus (odds ratio, OR) in bunch B-1 has compounded 2,5, in bunch B-2 - 2,6 and were in confidence interval limits (CI - 0,53 - 2,69; P=0,95).

Maintenance Zn in integral blood in bunches B-1 and B-2 testified about authentic low levels ($p < 0,05$) in relation to control bunch (in 1,4 and 1,5 times) that was regarded as exhibiting dimicroelementosis.

In menstrual blood of women of bunches B-1 and B-2 the zinc maintenance increased in 1,4 and 1,5 times in relation to the maintenance in integral blood ($p < 0,05$) that it is possible to explain its accumulation in myometrium at presence leiomyoma of uterus. Thus, in a case leiomyoma of proliferativ type accumulation signs were more expressive. In comparison with control bunch A the zinc maintenance in menstrual blood at leiomyoma of uterus was more in 1,4 times.

Conclusion. The obtained data confirms existence of essential communication of polymorphism of gene COL2A1 6846C/A on A/A and C/A to alleles with risk of development leiomyoma a uterus, as result of infringement of processes collagenform on type non differential dysplasia a connective tissue in a kind myomatic knots. The zinc maintenance in integral and menstrual blood at women about idle time leiomyoma and leiomyoma of proliferativ type testifies about it prognostic the significances, as process part appoptosis and proliferatio.

Key words: leiomyoma uterus, zinc, gene COL2A1.

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**CLINICORENTGENOLOGICAL PARALLELS OF BIRTH IN JURIES OF
UPPER CERVICAL SPINE IN NEWBORNS**

Summary. Generic damage of the cervical spine and spinal cord are the most neglected problems of childhood problems, the frequency of which is about $19,3\pm 0,6\%$. The lack of clinical suspicion in the presence of risk factors in traumatic obstetric history, lack of a clear specific clinical picture in acute as well as its variability prevents early diagnosis of birth injuries of the spine. X-ray method of diagnosis is the priority method of imaging lesions of the spine and spinal cord. Rotary subluxation of C1 - C2 leads to violations not only at the level of damage, and the whole body.

Key words: newborn, maternity spine injury, diagnosis.

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CLINICAL FEATURES OF ALLERGIC BRONCHIAL ASTHMA IN CHILDREN WITH DIFFERENT LEVELS OF DISEASE CONTROL

Summary. This article studied the clinical peculiarities of allergic asthma in children with different levels of control. To achieve this aim we examined 224 child with BA aged from 6 to 18 years old. The children with asthma controlled flow had significantly lower severity of symptoms than children with partially controlled or uncontrolled flow. Given the severity of BA and the level of control, we found that when intermittent disease course of BA control was achieved in 13 children (61,9%) and uncontrolled flow is marked not unlike children with severe persistent BA who have control over disease is achieved and controlled forms part number was 80%. Increased eosinophils accompanies many allergic diseases, in our study we analyzed

the levels of eosinophils in peripheral blood. The high level of eosinophilia in BA uncontrolled flow was observed in 11 patients ($13,92 \pm 3,89\%$), while partially controlled – in 1 patient ($1,79 \pm 1,77\%$), while the controlled flow of it was missing. After reviewing the clinical variants of the disease in the children with allergic BA, it was observed that above findings support the need to achieve full control of disease, help prevent progression of BA and avoid complications.

Key words: allergic bronchial asthma, children.

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THE RATIONALE FOR THE USE OF THERAPIES GLUTAMINE- GLYCINE-CYSTEINE DISODIUM IN PATIENTS WITH SEVERE COMMUNITY ACQUIRED PNEUMONIA

Summary. In this article, the data in the efficacy of treatment of 77 patients with severe community acquired pneumonia. The studies have shown a positive effect of the drug on the immune status of the patient, which was confirmed by clinical, laboratory parameters and quicker positive indicators of the endogenous intoxication when using the drug. The analysis found that the use of the drug provides a favorable course of the disease, allowing prophylaxis complications and reduce the time patients stay in the hospital an average of 3.5 days compared with a group of patients who did not use medication.

Key words: community acquired pneumonia, endogenous intoxication, clinical and laboratory characteristics, glutamine-glycine-cysteine disodium.

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**INVESTIGATION OF LIFE QUALITY IN WOMEN OF EARLY
REPRODUCTIVE AGE WITH EDEMATOUS FORM OF PREMENSTRUAL
SINDROME**

Summary. The examination of 130 women of reproductive age edematous with edematous form of premenstrual syndrome was carried out by means of clinical and anamnestic, laboratory and instrumental methods. With the help of the questionnaire SF-36 there was carried out the estimation of life (L Q) before and after different variants of women of early reproductive age with edematous form of premenstrual syndrome treatment. There was established that the better positive dynamics of «physical» and «psychological» life quality components indexes were observable in women who within three menstrual cycles received hormone therapy with application of drospirenone-containing drugs.

Key words: life quality, premenstrual syndrome, drospirenone.

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NEW MEANS OF CAPNOGRAPHY APPLICATION FOR DISCLOSING THE MECHANISMS OF INTERMITTENT HYPOXIC TRAINING IN BRONCHIAL ASTHMA TREATMENT

Introduction. The authors who used the IHT in the complex treatment of bronchial asthma (BA), have reported positive clinical effect but the impact of IHT on the airway conductance was not clear. Some researchers showed the improvement in spirometry indices that characterize the state of airway conductance, while others did not find such changes. Recently the high prevalence of hyperventilation syndrome in asthmatic patients was described. Meanwhile, we did not find any capnography examination in available literature. The purpose of present study is to examine the impact of IHT on the state of airway conductance and alveolar ventilation in BA children.

Materials and methods. The study involved two groups of asthmatic children aged 9 to 13 years: experimental group - 15 children (12 boys and 3 girls) who underwent a course of IHT and control group - 8 children (4 boys and 4 girls) who did not undergo IHT. All patients were diagnosed with asthma, persistent form, moderate, interictal period with no signs of respiratory failure. In both groups, all children were hospitalized and underwent "basic therapy". IHT course lasted for 10 days. Each training consisted of 4 sessions of breathing hypoxic mixture containing 12 % O₂ in nitrogen in duration of 5 minutes with 5 minute intervals of breathing ambient/ atmospheric air. Before the beginning of the course and one day after the IHT, the spirogram and capnogram "in the stream" were recorded. Because the experimental group consisted of children in different ages, gender, height and weight , the results of spirometry were analyzed not by the absolute indices value but as a percentage change from the initial values. The clinical effect of treatment was assessed by physicians who did not participate in the study. Analysis was based on 4 indicators: frequency and duration of attacks, the presence of uncomfortable breathing in between attacks, and the exercise tolerance. The evaluation was carried out in nominal points in the relative ranking scale. Overall score from 0 to 2 was estimated as the lack of

treatment effect, the score from 3 to 6 - as “an improvement”, from 6 to 11 – as a “significant improvement”, and above 11 scores - as a “recovery”. Statistical analysis was performed using the options for statistical data processing of the computer software «Excel 7.0 for Windows XP» from the calculation of average values ($M \pm m$), standard deviation (σ) and Student's t test.

Results. In the experimental group a significant improvement occurred in 11 patients, in 4 –and an improvement – in 4 children (73.3 % and 26.7 % of the total patients number, respectively). In the control group, a “significant improvement” has been achieved in 5 patients, and “an improvement” – in 3 patients (62.5 % and 37.5%, respectively). Compared to the control, the use of IHT resulted in a significant decrease in uncomfortable breathing during interictal period. Especially, IHT has positively influenced on the exercise tolerance. In the experimental group, the level of physical activity improved in 13.3 % of patients, significantly improved in 73.4 %, and 13.3% reached a level of healthy children. In the control group the improvement occurred in 62.5 %, the significant improvement - in 37.5% of children. IHT effect lasted 5 - 6 months. Airway conductance did not change significantly compared to initial stage. Before training, all patients had moderate dysfunctions of respiratory function in obstructive type. Forced expiratory volume in the first second (FEV_1), peak expiratory flow (PEF), $FEV_{(25-75)}$ were moderately reduced. Forced vital capacity (FVC) corresponded to normal. Hyperventilation syndrome was observed in 13 of 15 patients of the experimental group. Mean $P_{ET}CO_2$ value was $32,3 \pm 0,8$ mm Hg. After IHT, the breathing type returned to normal in 5 patients, level of hyperventilation significantly decreased in 6 persons, and in 2 patients significant changes were not observed. Mean $P_{ET}CO_2$ value increased to $35,6 \pm 0,7$ mm Hg. Other capnogram parameters were normal.

Conclusions. So, positive clinical effect of IHT is accompanied by the normalization of alveolar ventilation in accordance with the level of gas exchange. Prospects for further research using capnography "in the stream" is seen in the possibility of opening the mechanisms of this phenomenon.

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HYPERHOMOCYSTEINEMIYA AS RISK FACTOR DEVELOPMENT OF VEIN THROMBOSIS A RETINA

Introduction. Homocysteine is a product of methionine metabolism. Increased levels of homocysteine strengthen oxidizing stress, disturb endothelial function, raise arterial blood pressure and lead to thrombus formation. Homocysteine increases the risk of development of atherosclerosis, coronary heart disease, cerebral and peripheral vessels diseases. In cases of an ischemic thrombosis, it is necessary to estimate the blood serum homocystein level. Hyperhomocysteinemiya is an independent risk factor for the development of cute vascular eye pathology.

Materials and methods. We studied the potency of fibrinolytic blood plasma activity and blood flow state in the eye vessels in occlusive lesion of central retina tributaries by involving of 124 patients being on the stationary treatment in the ophthalmic department of SI "Institute of Urgent and Recovery Surgery n.a. V.K.Gusak of NAMS of Ukraine" in the period from 2010 till 2014 years. The middle patients' age was $11,3 \pm 8,9$ years. In the study participated patients with the ischemic type of central retina tributaries thrombosis in the first 10 days of disease.

Results. During the blood plasma investigation we noticed that the concentration of plasminogen tissue activator within the normal ranges varies from 4,6 to 12,8 ng/ml, that on an average was $66,5 \pm 3,67$ ng/ml; and average concentration tPA numbered $12,4 \pm 10,14$ ng/ml; it gives evidence that the exit from the endothelial tPA cells leads to the increase of fibrinolytic potential and plasminogen activation. Inhibitor concentration of plasminogen tissue activator within the normal ranges was

11,2±2,53 IU/ml and in ischemic vein thrombosis increased as 19,32±6,2 IU/ml. The highest PAI-I activity was fixed in patients with hypercholesterolemia and increased homocysteine content till 25,2±18,6 mcmol/l (the norm is 6,5±5,4 mcmol/l). It should be mentioned that the concentration of total cholesterol subject to the homocysteine level was from 6,4±0,12 to 6,9±0,14 mmol/l, LDL content meanwhile was from 4,3±0,04 to 4,4±0,03 mmol/l. Simultaneously with this takes place alfa-tocopherol concentration decrease from 1,3±0,04 to 0,69±0,11 mg and MDA increase in the range from 3,4±0,4 to 6,1±0,6 nmol/l. Thus the results give us the evidence about the level increase of LPO products in blood and alfa-tocopherol concentration decrease independent from the other indices are associated with the homocysteinemia level increase.

Conclusion. The most informative diagnostic sign of ischemic thrombosis of central retina tributary is increase of integral PI sign that shows the vessel resistance and decrease of speed hemodynamic parameters. It should be noticed that vein outflow disturbance is accompanied by the decrease of arterial perfusion as well that leads to the aggravation of vein thrombosis course. Hyperhomocysteinemia is accompanied in the whole cases by the increased concentration of total cholesterol, low density lipoproteins as well as LPO products and oxidant decrease. All the above mentioned plays an important role in pathophysiology of retinal vein thrombosis.

Further development perspectives allow counting the coefficients of predicative biochemical markers of development opportunity as well as process dynamics during the treatment of human retina vein thrombosis.

Key words: thrombosis of central retina tributary, fibrinolysis, hemodynamics.

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**PROGNOSTIC VALUE OF MARKERS DURING DIAGNOSIS
THROMBOSIS OF DEEP VEIN THROMBOSIS AT LONG BONE
FRACTURES OF LOWER LIMBS**

Introduction. Venous thromboembolic complications are quite frequent in traumatology and orthopedics, and especially for fractures of the long bones of the lower extremities on the background of forced inactivity, bed regime, comorbidities [PM Zuk, JA Sarhan, 2010]. According to many authors [Saadhe R.D., 2003, Matveeva N.Y., 2002], the frequency of violations of antegrade blood flow in these patients occurring between 40% and 80% of cases and in most cases takes place against a background of no clinical manifestations that relates them to extremely life-threatening in terms of various manifestations pulmonary embolism posttromboflebitic syndrome. A number of issues relating to violations of antegrade blood flow in patients with fractures of the lower extremities, most remain open [V.V. Pisarev those al., 2009]. Undefined: How often asymptomatic peripheral venous thrombosis complicated pulmonary embolism, which is a real correlation between blood biochemical changes in the hemostatic system and complications involving severe clinical symptoms, the effect on thrombus formation and its subsequent course of various types of medical manipulation, surgery, localization of damage and his character, the length of the operational period to that methodology surgery is the most "dangerous" for the development of thrombosis, hemostasis system as respond to anticoagulant therapy?

Especially little research, in our view, is the question of early diagnosis of complications that could be detected at different levels of trauma care that were not invasive or invasive small and highly specific, allowing high precision to confirm or exclude the presence of thrombosis.

These studies include the determination in patients with fibrin monomer and oligomers and their complexes with the products of fibrinolysis, which most authors refer to intravascular markers in vivo thrombus formation [PM Zuk et al., 2010].

The *purpose* of the given research is to determine the prognostic value of markers of thrombosis in injured with fractures of the lower extremities on stage surgery.

Materials and methods. Based on the results of the given publication surveillance antegrade blood flow in the veins of the lower extremities in patients with fractures of the tibia and femur bones from the dynamic study of blood concentrations of soluble fibrin monomer complex (RFNMK) and D-dimer at different stages of traumatic disease. Blood sampling for determination of markers of thrombotic events held during the first hours after injury, subsequently at 3, 5, 7, 9 days. The study was conducted by conventional methods. During the planning of surgical treatment must collect blood the day before the intervention, later every third day for 2 weeks oh. Total examined 256 patients aged 18 to 87 years (mean age 51.6 years). The women were 103, 153 men. Insulated hip fractures were observed 76 patients with tibia - 108 damage to both segments of a limb - 16 damage both bones of the extremities - 56 patients. Based on the classification of injuries of the extremities on the recommendation of the AO in 59 patients were type A fractures in 101 - type B, 96 - Type Open fractures ascertained in 52 (20.3%) patients, closed in 214 (79.7%). For objectification processing biochemical parameters used duplex color scanning veins of the lower limbs was performed using a special patented stand under the injured limb, which makes it easy to explore the limits of each thigh and lower leg veins even when staying in limb skeletal knights.

Results. Thus, only three of 82 (3.7%) cases, data on pathological thrombosis in the veins of the lower limbs injured, the presence of markers of abnormal blood clots were not doppler confirmation. It shows their great specificity and reliability. Due to the simplicity and accessibility techniques, making them indispensable in the process of early diagnosis of deep vein thrombosis of the lower limbs. The absence of D-dimer levels in 100% of cases indicates a lack of pathological thrombosis. By concentration RFMK can judge the activity course listed above process.

Conclusions. Based on clinical - laboratory and doppler examination of 256 patients with fractures of the long bones of the lower extremities established that the presence of markers of abnormal blood clots in the blood of these patients (D-dimer and

RFMK) diagnosis of deep vein thrombosis of the lower limbs confirmed the sonographic in 96.3% of cases. Availability, low cost and low invasiveness technique makes it indispensable in the process of wound diagnosis of antegrade blood flow in trauma patients.

Keywords: fractures of the long bones of the lower extremities, thrombosis of the long bones of the lower limbs, impaired blood flow.

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CHANGES IN INDICES OF THE SEX HORMONE LEVEL IN THE ORGANISM OF PATIENTS WITH CHRONIC TRAUMATIC INJURIES OF THE ORAL MUCOSA

Introduction. This article presents the results of the endocrinological examination of 110 patients with chronic mechanical injuries of the oral mucosa. It is known that oral mucosa is a tissue-target for sex steroid hormones influencing the course of the chronic inflammatory process accompanied by deep destructive and keratotic tissue changes.

Research objective. To determine the changes in indices of the sex hormone level in the organism of patients with chronic traumatic injuries of the oral mucosa during treatment.

Materials and methods. Blood endocrinological examination of 110 patients ill with a chronic mechanical injury and of 30 healthy persons of control was performed. All the patients were divided into 2 groups: the main and comparison ones.

Treatment of the patients from the main group included: antiseptic preparation with the solution Givalex, applications with the solution Galavit, applications with the film "KP-Plast vita", in case of chronic traumatic erosion and decubital ulcer the injured

area was pricked with the solution Galavit. In case of leukoplakia applications with 2% urea were used. Then the injured area was washed with distilled water and phonophoresis with Galavit was performed. In general all the patients were prescribed "Dekamevitum", "Arginine-Zn" and licorice root decoction. The patients from the comparison group were treated traditionally: local application of vitamin A and "Aevit" in general. The amount of the total testosterone and estradiol in the patients' blood serum was determined using the immunochemistry analyzer ACCESS. The amount of the free testosterone was determined according to the method of the immune-enzyme analysis using the reagent Free Testosterone ELISA (produced by DRG Instruments GmbH – Germany).

Results. Significant improvement of the estradiol level and reduction in the free testosterone fraction was revealed in the patients from the main group; they play a leading role in this pathology development due to functional interconnection of the sex steroid hormone level with the state of the oral mucosa. This proved the efficacy of use of the proposed therapy in combined treatment of the chronic mechanical injury of the oral mucosa.

Conclusion. Before treatment the studied indices of the main and comparison groups of the patients did not differ significantly with exception of the estradiol and free testosterone levels. After treatment of the main group of the men suffering from chronic traumatic erythema the tendency to insignificant increase of the blood estradiol level as well as total testosterone and reduction of its free form was observed. In the women the estradiol concentration approximated the values of the control group. In the patients with chronic traumatic erosion and decubital ulcer the blood estradiol level increased significantly but remained lower than in the control group, the free testosterone value decreased. After treatment the patients ill with leukoplakia of flat and verrucous types showed increase in estradiol and reduction in free testosterone fraction. The use of the traditional treatment method for the patients from the comparison group did not reveal significant index changes. The prospect of further researches is implementation of the proposed treatment method of chronic

mechanical injuries of oral mucosa into the dentist's practical activity with further determination of its efficacy.

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ESTIMATION OF SAFETY OF FLUOROQUINOLONES FOR THERAPY OF COMMUNITY-ACQUIRED PNEUMONIA OF THE PATIENTS WITH DIABETES MELLITUS

Introduction. Treatment of community-acquired pneumonia (CAP) at the patients with diabetes mellitus (DM) of different level of control and severity requires prescription of the antibiotics with board-spectrum activity against resistant pathogens. Respiratory fluoroquinolones have a lot of advantages over other antibiotics due to high and wide antimicrobial activity, convenient use. But they may cause lost of DM control and provoke life-threatening complications. It was established for gatifloxacin. Moxifloxacin and levofloxacin are considered as safe medications for DM patients.

Aim of the research was to estimate efficacy, correspondence to national guidelines, and safety of the fluoroquinolones use for antibacterial therapy of the CAP at the patients with DM.

Material and methods. Prospective study of 37 in-patients with CAP and DM II type was conducted. Average age was $64,9 \pm 11,5$ years, male - 15 (40,5%), female – 22 (59,5%). All patients had DM 2 type: mild – 12 (32,4%), moderate – 18 (48,6%), severe – 7 (18,9%). Mild signs of non-controlled DM were revealed at 14 (37,8%)

patient, moderate non-controlled DM – at 13 (35,1%). Ketoacidosis was developed at 3 (8,1%) patients. Most of patients had other chronic concomitant diseases of the cardiovascular and respiratory systems.

Moderate severe CAP was established at 30 (81,1%) patients. Severe CAP was at 7 (18,9%) patients who were treated in the ICU.

Results. It was established all prescribed antibiotics corresponded to recommendations for CAP treatment. Most of patients received combinations of 2 antibiotics - 28 (75,7%) or 3 antibiotics – 5 (13,5%).

Fluoroquinolones was prescribed 33 (89,2%) of patients. Ungrounded use of alternative combination of cephalosporines III generation and levofloxacin for therapy of the moderate CAP patients was remarked at 24 (64,9%) cases. Only 13 (35,1%) patients received antimicrobial therapy according to potential pathogen? severity of patient's condition. Overuse of antibiotics was revealed at the other patients. Normal level of glucose was found at 9 (24,3%) patients treated with levofloxacin. Mild hyperglycemia (7-10 mmol/l) as sign of borderline control of DM with dangerous for patient was at 11 (29,7%) patients. Loss of DM control with significant hyperglycemia and high level of changeable blood glucose was observed at 11 (42,3%) patients treated with levofloxacin and all who received gatifloxacin. One patient had been treated with levofloxacin died due to hypoglycemia developed after recovery from CAP.

Conclusions. Fluoroquinolones can not be the antibiotics of choice for CAP treatment of the DM patients and must be use only by vital evidence with control of the blood glucose. For improvement of CAP outcome of patients with DM the controlled survey researches must be conducted. They will become the ground of creating guidelines for treatment of this group of patients.

Key words: Community-acquired pneumonia, diabetes mellitus, fluoroquinolones.

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CLINICAL-LABORATORY CHARACTERISTIC OF THE JUVENILE RHEUMATOID ARTHRITIS MANIFESTATION

Introduction. All over the world and in Ukraine as well we observe growing up of the frequency of inflammatory and degenerative injuries of the joints, as well as juvenile rheumatoid arthritis (JRA) – that is chronic autoimmune systemic inflammatory disease of the connective tissue that started at the age of 16 years old with prevalence injury of the joints as erosive-destructive progressive polyarthritis with the following deformation of the joints and possible activation of the other organs and systems to the pathological process.

But up to the last days we have significant problems in the diagnostic of the disease, and the most its frequent reason is masked clinical presentation of the clinical signs, absence of the high abilities of the early diagnostic of JRA. Up to 30% rised up diagnostic mistakes during the first year of the disease, among them – 78% mistaken estimated other diagnoses except JRA.

So, that is why the *aim* of our study was to check clinical-laboratory peculiarities of the JRA manifestation.

Materials and methods. Under our control we got 72 children with JRA that received treatment in Vinnitsya regional clinical children's hospital. The average lasting of the disease in children was $23,2 \pm 1,3$ months.

During the study we examined patients with clinical and laboratory methods for such criteria: estimation of the complains and physical examination of the children, activity of the inflammatory response and severity of the degenerative-destructive changes during the study.

Results. In studied results of the examined children we found that 34 ($47,22 \pm 5,01\%$) of them had moderate activity of the JRA, 22 ($64,71 \pm 4,8\%$) of the girls, and high

activity was estimated in 38 (52,78±5,03%) patients, 25 (65,78±4,76%) girls were among them. We found that the age of the clinical manifestation of the JRA is different in patients with moderate and high activity of the disease.

It was possible to check etiology reason of the disease according to anamnestic data in 58 (80,55±3,91%) children. We found that 32 (44,44±4,98%) children passed acute respiratory viral infection in 1 – 2 weeks before the disease, in 15 (20,83±4,05%) patients was traumatic injury of the extremities, in 8 (11,11±3,14%) children clinical presentation of the arthritis started after bacterial infection (tonsillitis, etc.), in 3 (4,16±1,98%) patients - after passed intestinal disorder and first time classified as reactive arthropathy.

Pain was a leading clinical sign of the JRA and prevalently was periodical – 48 (66,67±4,69%) cases, other 24 (33,33±4,72%) children – with permanent character. According to the intensiveness with passed algometria was moderate – 6,3 (4,2; 9,1) points. It was interesting to find that pain in injured joints was admitted in 37 (51,38±5,01%) patients, in 26 (36,11±4,81%) children was pain located in muscles round the damaged joints and 9 (12,5±3,29%) of our children couldn't correctly differentiate place of the pain.

Estimation of the inflammatory activity at the beginning of the disease allowed found that in children with high activity of JRA median meaning of ESR was 38 (33;56) mm/h, at the same time in moderate activity - 28 (21; 31) mm/h ($p<0,001$). In the dynamic currency of the disease difference between two groups of children according to ESR rate saved and was diagnostically significant. C-reactive protein at the start of the disease was more than in healthy children (1,8 g/l) in 2,8 times in group with high activity of the disease and in 1,6 times in case of moderate JRA.

Conclusion. So, still perspective is the next study of the clinical-laboratory currency of JRA, cause at the background of its result possible to correct diagnostic and treatment measures.

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CLINICAL CHARACTERISTICS OF CHILDREN WITH CONGENITAL HEART DISEAS AFTER SURGICAL CORRECTION

Summary. The clinical characteristics of children with the CHD after surgical correction were investigated in this article. In a prospective phase 184 children with CHD were examined, aged from 1 month old to 18 years old, who were held radical correction of anatomical defects. The structure of the CHD prevailed defects with an enrichment of pulmonary circulation – 119 children ($64.67 \pm 3.52\%$), which is almost three times higher than the incidence of other types CHD (defects with depletion of pulmonary circulation – 35 ($19.02 \pm 2.89\%$) children, CHD with depletion of the circulatory system – 30 ($16 \pm 2.72\%$) children). The dominant clinical feature in children with the CHD after surgical correction was dyspnea, which was noted in 137 children (74.46%). 83 children (45.11%) had also essential symptoms of weakness and rapid fatigue, pain in the heart area – in 58 patients (35.52%), feeling the heartbeat – in 37 (20.11%) studied patients, manifestations of hypertension – 15 (8.15%) patients and disruptions of the heart - in 8 (4.35%) children with the CHD. The children after surgical correction of CHD had high frequency of arrhythmias and conduction – 140 (76.08%) patients. Syndromes conduction significantly predominated among other ECG phenomenon; there were 132 (71.74%) children ($r < 0.01$) with it. Residual pathology in children with the CHD after surgical correction and clinical features of these patients require monitoring for longitudinal and complex rehabilitation.

Key words: congenital heart defects, children.

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THE ROLE OF THE LEPTIN IN DEVELOPMENT OF THE OBESITY IN CHILDREN

Introduction. The widespread of the obesity in a children's population rises up critically as in countries of the Europe, as well in Ukraine, and stands by 4,5% up to 38,0%. The health of the child depend on the amount of the different factors, among them biochemical, social, hygienic, etc. Feeding of the infants is one of the main factors in creation of the health condition of the baby. For the last years huge baggage of the knowledge was collected devoted to abilities of the earl rational feeding of the children and its influence on the mechanisms of the functional abilities in the future. Important component of the pathogenesis mechanism of the obesity is a fat tissue, that has function of the endo-, auto- and paracrine functions. Last studies presented that fat tissue is an endocrine organ that products hormone-like components, mediators, cytokines, chemokines. One among this hormones is leptin. So, increasing of the body weight is supervised with its secretion, that correlates with weight of the fat tissue. Exploration of the physiological and pathophysiological role of the leptin allows widespread knowledge about the mechanisms that regulate neuroendocrine function, body weight and energy metabolism.

So, the *aim* of the study was to improve diagnostic of the obesity in infants at the background of deep analyze of the clinical-anamnestic data amd leptin level.

Materials and methods. For the achieving of the aim of the study we examined 120 children of the early age. All patients on dependence on their physical development were spreaded for 3 groups. I group was presented with 38 (31,6 %) children with

risk of the development of the extrabody weight, II group - 42 (35,0 %) with extrabody weight and III - 40 (33,4 %) infants with obesity.

Results. We found exact increasing of the leptin level in children with extrabody weight (EBW) and obesity ($7,83\pm 0,76$ ng/ml and $21,6\pm 4,60$ ng/ml) in compare with the group of the risk of development of extrabody weight ($4,47\pm 0,25$ ng/ml) and children of the control group ($2,90\pm 0,21$ ng/ml), ($p<0,05$). As well significant difference between leptin level in children with different sex was admitted. So, girls of the main group received the level of leptin higher than the same in boys. We passed analyze of the leptin level on dependence on type of the feeding and sex of the children. We found that leptin level in infants didn't depend on type of the feeding ($p>0,05$).

At the result of the study we found positive correlation between leptin level and cholesterol amount ($r=+0,36$; $p<0,05$); leptin and index of the body weight ($r=+0,35$; $p<0,05$) in group of the children with risk of the extrabody weight development. In group of the children with extrabody weight we also found correlation between leptin and lipids of the very low capacity ($r = - 0,38$; $p<0,05$); leptin and index of the body weight ($r=0,4$; $p<0,05$).

Conclusion. So, the future study can be useful cause can lead to the deep diagnostic measures of the earl obesity in infants, that can allow all of us to treat the problem more successful and in time prevent progression of the pathological findings.

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**OPTIMIZATION OF ARTERIAL HYPERTENSION TREATMENT BY
VERTEBROILIAC THERAPEUTIC METHODS**

Summary. This article analyzes the results of the vertebroiliac therapeutic treatment of patients with arterial hypertension, which can reduce the pharmacologic stress, increase sensitivity to antihypertensive drugs, eliminate resistance, prevent and the side effects and the complications of pharmacotherapy.

Key words: hypertension, vertebrology therapy, pharmacotherapy.

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PREDICTORS OF DEVELOPMENT OF COMPLICATIONS IN PATIENTS WITH ISOLATED AND COMBINED TRAUMA OF ABDOMEN ORGANS

Summary. In the work the analysis of results of surgical treatment of patients with abdominal trauma and estimation of the impact of individual factors, diagnostic indicators and methods of treatment tactics on the number of postoperative complications and mortality rates, are offered to use new diagnostic methods and prognostic markers of scale, allowing more specific indications for technology choice of conservative treatment, invasive monitoring techniques and principles of surgical treatment, improve the quality of postoperative supervision patients with isolated and combined abdominal trauma.

Key words: abdominal trauma, isolated and combined injury, diagnostic markers, predictors of complications and mortality, prognostic score, postoperative monitoring.

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**POSTDECOMPRESSIVE DYSFUNCTION OF LIVER AS A PROBLEM OF
SURGICAL TREATMENT OF THE PATIENTS WITH NONCANCER
OBSTRUCTIVE JAUNDICE**

Summary. In the work the results of surgical treatment of 510 patients with noncancer obstructive jaundice are given. Stratification of patients according to the process and methods of biliary decompression allowed us to assess the impact of the choice of surgical treatment on the degree of hepatic dysfunction in the postoperative period by changing the dynamics of its prognostic predictors. Due to this the accomplished postoperative assessment of the safety of conventional and minimally invasive internal and external biliary decompression on the possible initiation and progression of liver postdecompressive dysfunction is given.

Key words: noncancer obstructive jaundice, methods of surgical biliary decompression, stage of postoperative safety, postdecompressive dysfunction of liver, critical moments of postdecompressive period.

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CLINICAL PECULIARITIES OF THE SCHONLEIN-HENOCH PURPURA

IN CHILDREN

Introduction. Schonlein-Henoch purpura (SHP) is one of the systemic vascular disease, that has currency of the generalized microthromb vascular disease with the background of aseptic inflammation and disorganization of the micro vessels walls that damage vessels of the skin, internal organs in the system of microcirculation. The most particular age for development of the disease is from 5 months up to 18 years. SHP is one of the most actual problems of the modern pediatric science, that caused by difficulties of the diagnostic measures on the early stages of the disease, increased value of the morbidity in all age groups that can be connected with intensification of the allergy action of the drugs and food, presence of the chronicle infection. According to the last scientific reports for the last ten years SHP is manifested with more severe, relapsing currency with prevalence of the mixed forms.

That is why the *aim* of our study was to estimate peculiarities of the clinical currency of SHP in children.

Materials and methods. For the achieving of the concrete aim of the study we examined 123 children with SHP at the age from 1 up to 18 years old that passed treatment at the department of oncohematology in Vinnitsya regional children's hospital. For the correct estimation of the diagnose of SHP we used such methods: studying of the complains, anamnesis of the disease and life, results of the objective study and complex of the laboratory (general clinical, biochemical, serological and immunological explorations) as well as instrumental investigations.

Results. Complicated allergological anamnesis was estimated in 35 (27,41±2,01%) children, that was going up to one third of the general number of the patients. We should admit that allergy reaction was observed at the same quantity in boys and girls - 17 (28,81±2,07%) and 18 (28,12±4,5%) patients. As well we found that in 27 (21,77±4,14%) of all children was acute or chronicle herpes infection, most common for CMV 14 (51,85±5,04%). In 9 (33,3±4,72%) patients we estimated mixed infection.

Skin or rash syndrome is common for all children with SHP and is a leading at the diagnostic of the disease. We passed analyze of the intensivity and stage of its manifestation in dependence on the sex of the children. All children had spot-papula type of rash on the skin, but necrotic changes were present just in $8,47\pm 2,79\%$ of boys and $9,37\pm 2,92\%$ of girls that wasn't significantly different. At the age groups of 1 - 3 years old, 4 - 6 years old and 13 - 18 years of age at the same quantity was presented moderate and intensive rash that was from $41,17\pm 4,92\%$ up to $52,0\pm 4,99\%$. But the group of 8 - 12 years old patients was presented with a skin rash more intensive in 15 cases, that was $62,5\pm 4,87\%$ of all children in the group.

The widespread of the patients according to the stages of the activity was presented in a such way - II activity degree was more than 50% in all age groups: from 1 up to 3 - 19 children ($55,88\pm 5,01\%$), from 4 up to 7 - 30 ($60,0\pm 4,89\%$), from 8 up to 12 - 12 ($50,0\pm 5,0\%$), from 13 up to 18 - 11 ($73,33\pm 4,44\%$). I activity degree was occurred in two times rare, and III activity degree was observed just in one fourth part of the patients and was more common for the age from 4 up to 7 years - 13 ($26,0\pm 4,38\%$) of all cases.

Conclusion. So, still perspective are the following studies devoted to clinical peculiarities of the clinical currency of the SHP in children cause can give an ability at the background of concretization received data improve diagnostic and treatment measures of the disease.

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**PSYCHOSOMATIC DISORDERS AT ISCHEMIC HEART TROUBLE:
MODERN LOOKS, FEATURES OF PATHOGENY AND TREATMENT**

Summary. The purpose of work was to study the state of problem of psychosomatic disorders, their prevalence, methods of diagnostics, methods of correction for patients by ischemic heart trouble (IHT). It is set that different psychogenic symptoms come to light at a 50% population, and 80 - 95% patients with the different forms of IHT run into them. On the modern stage of the treatments of IHT a substantial place is occupied by the intervention methods of diagnostics and treatment, which often predetermine forming of different psychosomatic disorders and substantially influence on a prognosis and quality of life of these patients. Thus, study of prevalence, symptoms of psychomatic disorders, different forms of these disorders, and also it is allowed to improve their timely and effective treatment and quality of life of these patients.

Key words: ischemic heart trouble, psychosomatic disorders, quality of life, intervention cardiology.

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THE CLINICAL AND ULTRASOUND FEATURES OF EARLY PREGNANCY LOSSES

Summary. The article presents the results of clinical and sonographic examinations of 90 women with early pregnancy loss: missed abortion at 4-11 weeks of gestation and ectopic pregnancy. It was established that asymptomatic disease occurs in 46.7 % of women with missed abortion and in 31.1% of patients with tube pregnancy.

Anomalies of the uterus as an etiological factor of missed abortion, occurs in 24.4% of women. Application of comprehensive evaluation once three mandatory components of the diagnostic algorithm – clinical symptoms, results of pelvic ultrasound and determination of levels of hCG – gives rise to the kind of confident recognition of early reproductive losses for the purpose of timely therapeutic interventions.

Key words: sonographic examinations, missed abortion, ectopic pregnancy, early pregnancy loss.

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COMBINATION LIPID-LOWERING THERAPY IN PATIENTS WITH HYPERTENSION AND CONCOMITANT ABDOMINAL OBESITY

Summary. Hypertriglyceridemia is a characteristic feature of dyslipidemia in hypertension in patients with concomitant abdominal obesity. These individuals constitute an increased risk of cardiovascular complications, so optimizing their treatment is extremely important medical problem. The aim is to study the dynamics of the major lipid spectrum of the blood vessels and endothelial function as a marker of atherosclerosis, when you connect to the drug ω -3 polyunsaturated fatty acids to the standard combination of antihypertensive and lipid-lowering therapy in patients with hypertension and abdominal obesity. The analysis of the dynamics of lipidohramy and vascular endothelial function in patients with essential hypertension and abdominal obesity during the 6-month standard (basic) antihypertensive

(lisinopril, amlodipine) and lipid-lowering therapy (atorvastatin) (group I) and accession thereto ω -3 polyunsaturated fatty acids (group II). When analyzing the results of 6 months of treatment in the studied patient groups in triglycerides reduction was significantly more pronounced when using combination antihypertensive and lipid-lowering therapy ($-40,9\pm 3,1\%$ in group II and $-22,7\pm 2,3\%$ in group I, $p<0,001$). Also in group II was marked significantly greater increase in HDL cholesterol ($38,6\pm 2,5\%$ in group II and $28,7\pm 2,6\%$ in group I, $p<0,05$) and improved endothelium vasodilation ($9,86\pm 0,28\%$ in group II and $6,8\pm 0,23\%$, $p<0,01$). Thus, in patients with hypertension and concomitant abdominal obesity observed significant dyslipidemia, a characteristic feature of which is hypertriglyceridemia. Joining the standard antihypertensive and lipid-lowering therapy ω -3 polyunsaturated fatty acids contributes significantly more effective normalization of triglycerides. For persons with hypertension and concomitant abdominal obesity is characterized by endothelial dysfunction and significant additional purpose to standard therapy ω -3 polyunsaturated fatty acids leads to a significant improvement.

Key words: arterial hypertension, obesity, dyslipidemia, endothelial function, free-3 polyunsaturated fatty acids.

Methods

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**THE ROLE OF INTERACTIVE TEACHING METHODS IN TRAINING OF
STUDENTS OF MEDICAL PSYCHOLOGY DEPARTMENT, DISCIPLINE
“PEDIATRICS”**

Introduction. Whereas intensive informational and scientific and technical development of a society in general and medicine in particular, searching for new teaching technique in medical universities is advisable and reasonable having the aim of training of specialist able to work on constant professional growth. At present there is necessity not only for training of young specialists, but instructing them how to master new technologies and get present knowledge that will be possible if traditional academic presentation of material and successful choice of teaching technologies - strategy, priorities, interaction system and collaboration between a teacher and students during practical classes and lectures are combined.

Objectives. Development of interactive teaching methods in scientific and pedagogical process of teaching a discipline “Pediatrics” for students of Medical Psychology Department.

Materials and methods. For in-depth comprehensive study of thematic material during practical classes in “Pediatrics” by students of the fifth year of studies of Medical Psychology department the Project Method and Taba Teaching Strategy have been used.

The project method as an interactive technology makes it possible for students-medical psychologists to learn how to master scientific knowledge well, choose up-to-date diagnostic technologies and methods of treatment and follow the achievements of evidence-based medicine. At the same time, teaching in such a way broadens the analytical potential of future specialists. Taba Teaching Strategy helps organize gently the preliminary control of standard of knowledge of students that makes it possible to change the degree of complexity of suggested assignments dynamically in accordance with level of training of students.

Results. Class work in “Pediatrics” was done by two groups of students of the fifth-year of studies of Medical Psychology Department in general - 11 people. The plan of practical classes consisted of 15 themes in accordance with curriculum on this subject approved by Methodic Meeting of the Chair and included questions about physiology and pathology of newborns and specifics of care after newborns of

different period of gestation. Four lectures in corresponding themes were read to students. Average age of students in academic groups - $22,5 \pm 1,5$ years old. Gender distribution in groups was as follows: 27,3% of boys and 72,7% of girls. The most important for educational process including interactive teaching methods was the fact that about 9,1% of students had completed a medical education of the first level and had a qualification of "a medical nurse" and about 18% of students had a practical experience of taking care after premature newborns of low and very low weight with associated perinatal pathology, and 18% of students were getting another higher education in Finances and Audit. 54% of students had complete secondary education, 33,3% of them have Certificates of complete secondary education with honours. Evaluation of effectiveness of involvement interactive teaching technologies into pedagogical process at Medical Psychology Department has been held on the ground of current progress in "Pediatrics". There were no students who had academic debts at set terms. An average mark for academic progress in a group amounted to 4,0. There was established that 18% of fifth-year students of Medical Psychology Department had 3,0 as an average mark for academic progress, 9% of students - 4,89, 18% - 4,65, 18% - 4,45 and academic progress of 36 % of students amounted to 3,87 ($p \leq 0,05$). The use of Project Method and Taba Teaching Strategy during practical classes in Pediatrics along with routine methods for lectures for senior students of higher medical educational institutions has made it possible to achieve average marks for academic progress and prevent as well as provide dissolution of academic debts in time by students of Medical Psychology Department.

Conclusions. Interactive teaching methods are the next stage of evolutionary development of academic university system of training specialists, training of professional, scientific elite in Medicine and formation of all-sufficient individualities among students. Created teaching methods make it possible to expand limits of current scientific and pedagogical paradigms, serve to professional growth and development of teachers and students. The method «Project» allows a performer to work through current issues and have a sense of responsibility, and during the work at this method it keeps up motivation of a researcher-innovator that can be realized in

the scientific and research field in future. Taba Teaching Strategy is a general means for checking a standard of knowledge in studied theme.

The perspective of further research consists in studying, improvement and implementation of interactive teaching methods into the system of academic pre-diploma education of students from higher medical educational institutions in order to improve the quality of education and training of competitive young specialists.

Key words: pedagogical process, interactive teaching methods, higher medical education, clinical thought

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Bondarenko N.N., Kolesnikova S.V., Antonov Y.V., Pischulina S.V.**

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**OPTIMIZATION PRINCIPLES OF EDUCATIONAL PROCESS ON
DEPARTMENT OF PHYSIOPATHOLOGY OF DONETSK NATIONAL
MEDICAL UNIVERSITY NAMED AFTER M. GORKYI**

Summary. The basic principles of new methods of educational process, inculcated on the department of physiopathology of the Donetsk national medical university are lighted up in the article: clinical orientation of teaching, use of the Internet and feedback a student is a teacher, improvement of rating control and independent work of students.

Key words: credit is the module departmental teaching, clinical orientation of teaching, rating control, independent work of students.

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**INTEGRATION OF TEACHING OF MEDICAL BIOLOGY AND
PHARMACOLOGY AT THE STUDYING THE VITAL ACTIVITY OF
MALARIAL PLASMODIUM AND PREVENTIVE MEASURES AND
TREATMENT FOR MALARIA**

Introduction. The plasmodium that brings on a person malaria are four kinds that differ from each other with morphological and biological peculiarities, the time of development in the organism of a human and with the way of cause disease Plasmodium vivax, P. ovale, P. malariae, P. falciparum [Dykyi and etc., 2003]. **The aim of the work:** on the base formed main knowledge and skills of medical biology to master the material of pharmacology concerning differentiated phased treatment for this hard pathology with the significant number of modern antimalarial means.

The results. To determine the effective methods of the treatment for malaria and to prescribe the course of the antimalarial drugs it is important to make an emphasis on the phased development of the parasite in an organism of a human. The mosquito's bite of the kind Anopheles infects a human. The falciform bodies which reached the liver penetrate in hepatocyte – tissular (echzoerythrocytic) schizogony. Concerning medicamental treatment of a patient on this phase then it is a group of drugs – hematoshyzotropic drugs: quinine hydrochloride, dihydrochloride or sulphate, quinidine gluconate [Mashkovskiy, 2010; Skakun, Posohova, 2003; Chekman and etc., 2010]. Erythrocytic phase of the shizogony makes conditional on all clinical manifestation. The person becomes infected when in his/her blood there are gametocytes. The next group of the antimalarial drugs causes the death of

gametocytes in the blood of the patient – gametocidal agents: primaquinad of phosphate and hinocide [Mashkovskyi, 2010; Skakun, Posohova, 2003; Chekman and others, 2010]. The drugs, that ruin the development of the parasites in the organism of mosquitos and prevent to form the sporozoites, belong to sporont agents to which pyrimethmine, proguanil belong [Mashkovskyi, 2010; Skakun, Posohova, 2003; Chekman and others, 2010].

Thus, at the further studying profiled discipline of pharmacology by the students of the third course it is very important to make an accent that the patients with malaria are spent etiotropic and pathogenetic treatment.

Conclusions. In the presentation of the material at the studying the medical biology it is necessary to keep well the basic principles of logic because the medical sense has not only the form of the agent but and in the high degree definition of the phase of its development in the organism of a person and a mosquito and give the material with the accent on the further studying by pharmacology corresponding antimalarial drugs for the phased and differentiated treatment. Integration of the teaching disciplines such as the medical biology and pharmacology, provides the forming the qualified specialist-pharmacist by the way of the capture by the students the necessary skills for the further professional activity.

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**BY THE QUESTION OF THE MAGNITUDE NECK-DIAPHYSEAL ANGLE
AND THE ANGLE OF TORSO OF THE FEMUR, SHOWING A
MEASUREMENT RESULT BY 232 OF THE FEMUR FROM THE MUSEUM
NAMED N.I. PIROGOV VNMU DEPARTMENT OF HUMAN ANATOMY**

Introduction. Knowledge of appropriate size neck-angles and torsion diaphyseal femur is essential to the practice of traumatology and orthopedics. In the hip joint to restore normal biomechanics its extremely important to know the regulations, including regional. Anatomy textbooks are usually fairly wide ranges of ratios of these angles: ND - 115-135 °, the angle of torsion - 10-20 °. Some works are standards that are based on measurements of anatomical specimens of bone. The book presents the results of measurements in the U.S., England and Germany. According to measurements performed Ukraine national orthopedic – trauma.

Materials and methods. Measurements were carried out on 214 dry femur adults and 18 - the bones of teenagers and young men who are in the anatomical museum VMNU. Among 97 Left Femur and 117 right. For a more accurate measurement of these angles and reduce labor costs developed a special method and device that are not used before. Femur fit into a special plate on which were printed the contours of the femur with the set neck- diaphyseal angles of 105 ° - 145 °, with an interval of 5 °. The measurement was carried out as at 18 femoral adolescents and young 8 - and 10 left - right. Conclusion of adolescent (juvenile) age data femur, or rather their owners, we have made based on the fact that the data remains sprout bone area between the neck and the head of the femur and distal to it. It is clear that in the case of the active zone sprout, that during adolescence (12-14 years), while there was bone digestion would melt zone sprout and separation of epiphysis metaphysis.

Results. As a result of our research on 232 dry femur residents our region showed that the average angle of torsion was +11,89 °. Differences between the angle torsion of the left and right femur accounted on average - +13,1 ° and + 10,9 °. The differences were not statistically significant. Average angle ante torsion femur was young +14,6 °. Although the differences are not statistically valid, but our observations confirm the literature known fact that the torsion angle decreases slightly with age. However, our observations showed considerable variability torsion angle from +39 ° to - 21 °, whereby torsion angle of +39 ° to +26 ° was observed in 7.47% and retro torsion from - 1 ° to - 21 ° was registered at 14.01 %, which is not

particularly uncommon. It should be noted that the external examination of the bones of the extremes, as enlarged and reduced torsion angle, looked normal. Radiography of the bones, is made in five of these cases also revealed pathology. From this we can conclude that in case of an increase or decrease in the angle of torsion, even with significant differences from the mean values do not require surgical treatment unless they are accompanied by clinical symptoms of disease. Neck- diaphyseal angle was on average $+125,22^\circ$, including left - $+126,1^\circ$, right - $+124,5^\circ$. Average ND bones boys made $+128,4^\circ$, our observations suggest that the magnitude ND reduced. The results of our measurements of dry bones residents skirts found no significant differences from the values of angles and torsion ND known from the literature.

Conclusions. The most common variant, found in our study - the angle of torsion - (43.45%) in the range of $+6^\circ$ to $+15^\circ$, angle ND - (34.1%) in the range of $+120^\circ$ to $+129^\circ$. Average angle ND boys and adolescents was $+128,4^\circ$.

Prospects of our work is the use of the data anatomical studies to plan for corrective osteotomy and hip joint.

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Course of Anaesthesiology and Intensive Care of Vinnitsa National Pirogov
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MODERN METHODS OF TEACHING INTENSIVE CARE

Introduction. It is difficult to teach under the conditions of a clinic. A patient should be sure that he/she is protected and a person who studies will not make a mistake. Taking into account the above-mentioned the *objective* was to study modern safe methods of teaching intensive care.

Materials and methods. Literature data on practical training of anaesthesiology and intensive care in Western Europe and Northern America were analyzed. There are practically no professional limitations while studying with the newest simulators. The reasons for wrong actions during simulation classes and their results can be discussed openly and thoroughly without problems and not being afraid of accusations and legal proceedings. As a rule the majority of medical educational institutions in Northern America and Europe have modern simulation departments. Modern interactive simulators are dummies of natural size equipped with mechanical, pneumatic and electronic systems so that they seem alive. The simulators "live" implementing a computer program through a tutor. The effectiveness and success of simulation classes depends on appropriate training, detailed practicing of the scenario, accurate determination of the training objective and role for each participant. It is also required to ensure safe training conditions.

Results. Simulation classes include three main components:

1. Introduction to the substance of the topic.
2. Simulation performed according to the previously determined scenario usually involving a team of 2-3 persons.
3. Summarizing - a key part of the training lasting 2-3 times longer than simulation. During this time the participants analyze the results of the taken actions evaluating their correctness and success. Some training elements, previously recorded simulation episodes, can be observed on the screen.

Conclusions. Simulation should be considered as a new efficient training tool and laboratory of safe and qualitative work in the medical profession. Simulation is not a substitute for clinical experience and is just an addition thereto. Introduction of the interactive simulation training for students, interns and learners of the postgraduate faculty will considerably improve the quality of knowledge and skills.

Key words: professional training, simulation, skills.

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**PRINCIPLES AND TECHNOLOGY INDEPENDENT WORK IN MODERN
CONDITIONS INNOVATIVE EDUCATIONAL AND INFORMATIONAL
SPACE**

Summary. The existing conditions in modern methodological and technical capabilities for qualitative transformation of traditional teaching methods, information and communication methods in advanced educational technologies, those will improve the efficiency and effectiveness of medical education according to the requirements and demands of modern society are analyzed.

Key words: teaching methods, communication technology, informational space.

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**THE METHODS OF PATHOPHYSIOLOGY TEACHING PROFILING AT
THE STOMATOLOGICAL FACULTY OF THE VINNYTSYA NATIONAL
MEDICAL UNIVERSITY NAMED AFTER PIROGOV**

Summary. In the article the main principles of the new methods of the learning process are thrown light on and which are implemented at the Department of Pathophysiology of the Vinnytsya National Pirogov Memorial Medical University to improve the quality of the stomatological students' preparation.

Key words: theoretical preparation, improving, clinical orientated teaching, rating control, self-study of the students.

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**EXPERIENCE OF TEACHING INTERNAL MEDICINE ENGLISH-
SPEAKING STUDENTS**

Summary. We provide a positive experience of teaching internal medicine in English to foreign students of the faculty of dentistry. We offer you to use complex knowledge control system for an objective evaluation of students. This approach allows us to control the assimilation of knowledge by the student at all levels.

Key words: teaching, internal medicine, English-speaking students.

Social medicine, health care organization

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EVALUATION OF THE INFLUENCE OF REHABILITATION PROGRAM ON DURATION OF STAYING IN SPECIALIZED DEPARTMENT OF THE PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

Introduction. The differences in staying in hospital between patients of control and experimental groups (more intensive care in most cases) are overlooked, and often researchers do not consider them as intangible. The latter constitutes by clinical protocols, insurance policies that rigorously define certain treatment duration. Yet Ukraine still has not implemented such. Therefore, length of staying in hospital to great extent depends upon will of patient. Thereby, we faced unique opportunity to unveil «intangible», but still very important impact of rehabilitation program (RP) administration on instigating active attitude in a patient to treatment process, shaping patient's interest and understanding of its continuum and importance. The impact is hard to reveal to yet another reason that is it is «masked» by patients' heterogeneity due to individual peculiarities. The only possible way is to «unmask» it by adjustment for individual characteristics.

Materials and methods. Cohort of 1122 patients with acute myocardial infarction (AMI) hospitalized in Vinnitsya cardiological department in 2006-2008. The goal was to evaluate the influence of rehabilitation program (RP) on duration of staying. Clinical variables of patients were being measured. Data analysis exploited Cox proportional hazard modeling. RP was administered differently. First of all, patients were staying in the hospital from 5 to 35 days, half of them up to 20th day (median). That is why we defined short term (20 days or less) and long term (more than 20 days of staying) cohorts retrospectively. This we thought is important from the point of development of patient's skills and compliance. In part, one envisaged improvement in regularity of adherence to RP requirements after discharge from hospital. Secondly, we defined two regiment of RP: First included all components of RP, while second comprised only components of physical activity and treatment. Propriety explained by convenience for patient and economical expediency. These two components are most influential *ad hoc* and adherence after discharge largely

depends upon patient. Combinations of these two definitions constituted four experimental cohorts.

Data analysis was performed by the most flexible semi-parametric approach based on proportional hazard Cox model.

Covariates list consisted of the most influential confounders, which are age, gender, occupation, severity of condition at hospitalization, presence of pathological Q, localization of AMI, comorbidity load by Charl's index. Data featured absence of right and left censoring. Calculation was performed in SASv.9.13environment, by PHREG procedure.

Results. Significant confounders appeared to be severity of condition at hospitalization, and presence of pathological Q. Each next grade of condition severity – moderate, serious, very serious – significantly ($p=0,001$) increased expected staying in hospital by 23% ($RR=1, 23$). Presence of pathological Q with high credibility ($p<0, 0001$) increased expected staying in hospital by 39% ($RR=1,39$).

It appeared that administration of the program indeed lengthen the average duration of staying of the patients with acute myocardial infarction by 12%. Notwithstanding the effect of administration happened to be of marginal significance ($p=0,071$). It is most plausible that involved in program patients were growing their interest in treatment accomplishment, in part due to seeing it as more effective. The more expanded covariate list might clear the way to “unmask” even more evident prolongation of hospital staying.

Conclusion. Factor “difficulty of the condition at the time of hospitalization” with gradation (average, difficult, very difficult), certainly ($p=0,001$) increased the average time of hospitalization phase for patients with AMI on 23% ($RR = 1, 23$). The presence of pathological Q wave was most significantly affecting the average length of stay of infarct patients in hospital ($RR = 1, 39$), considerably extending it by 39% ($p<0, 0001$). The purpose of RP is to prolong the average period of patients' hospitalization in the cardiology department by 12%, however this effect is on the verge of reliability ($p = 0, 071$). We believe that the rehabilitation measures contributed to the increase of the compliance level of patients with AMI.

Key words: acute myocardial infarction, rehabilitation, in-patient treatment, compliance.

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PECULIARITIES OF THE QUALITY OF LIFE OF THE PATIENTS WITH SCHIZOPHRENIA AND CONCOMITANT SOMATIC DISORDERS

Introduction. Research of the quality of life of the patients with schizophrenia as an integral characteristics of physical, psychological, social, and emotional state of an individual becomes especially urgent. The *objective* of the present study was to investigate the peculiarities of the quality of life of the patients with schizophrenia and different variants of somatic comorbidity.

Materials and methods. The quality of life was studied using a short questionnaire of the World Health Organization (WHO) (WHOQOL-BREF) and specialized questionnaire for assessment of the quality of life of the patients with schizophrenia QL-26 and QL-SM. The statistical processing of the obtained data was carried out using non-parametric methods: Mann-Whitney test, Spearman's method of rank correlation.

Results. At the stage of schizophrenia exacerbation in the patients without comorbid somatic disorders the average indicators of the quality of life related to the physical health made up $43,3 \pm 15,4$ points, related to the psychological quality of life - $26,6 \pm 17,7$ points, related to the social quality of life - $15,2 \pm 24,2$ points, related to the environment - $31,5 \pm 11,7$ points, the average indicator according to the cluster

"Positive Emotions" was $7,8 \pm 3,6$ points, "Cognitive Functions" - $10,4 \pm 4,7$ points, "Negative Emotions" - $8,2 \pm 4,8$ points, "Ability to Perform Everyday Tasks" - $9,0 \pm 4,3$ points, "Working Capacity" - $7,8 \pm 3,8$ points, "Personal Relations" - $8,9 \pm 3,3$ points, "Practical Social Support" - $6,2 \pm 4,0$ points, "Opportunities for Recreation and Entertainment, their Use" - $7,6 \pm 4,1$ points, "Emotional Adequacy" - $12,8 \pm 5,7$ points, "Self-orientation and Reality Orientation" - $16,0 \pm 5,1$ points, "Communication-related Experiences" - $10,6 \pm 5,2$ points, "Self-control and Distraction from Unpleasant Experiences"- $13,0 \pm 5,2$ points, "Self-help and Psychoprophylaxis" - $16,0 \pm 5,0$ points; in the patients with comorbid disorders that appeared before the onset of schizophrenia - $44,0 \pm 14,7$ points, $26,4 \pm 17,3$ points, $15,0 \pm 22,8$ points and $31,6 \pm 13,3$ points, $7,8 \pm 3,5$ points, $10,4 \pm 4,8$ points, $8,1 \pm 4,7$ points, $8,9 \pm 4,3$ points, $8,1 \pm 4,7$ points, $9,0 \pm 3,4$ points, $6,2 \pm 4,1$ points, $7,7 \pm 4,1$ points, $12,9 \pm 5,8$ points, $16,1 \pm 5,2$, $10,6 \pm 4,9$ points, $13,0 \pm 5,2$ and $15,8 \pm 5,1$ points respectively; in the patients with comorbid disorders that arose after the onset of schizophrenia - $43,0 \pm 15,3$ points, $26,4 \pm 18,6$ points, $15,3 \pm 23,5$ points and $31,4 \pm 12,5$ points, $7,7 \pm 3,6$ points, $10,4 \pm 4,7$ points, $8,1 \pm 4,8$ points, $8,9 \pm 4,4$ points, $7,9 \pm 3,8$ points, $9,0 \pm 3,5$ points, $6,2 \pm 4,1$ points, $7,7 \pm 4,1$ points, $12,9 \pm 5,7$ points, $16,0 \pm 5,1$ points, $10,7 \pm 5,3$ points, $13,1 \pm 5,4$ and $16,1 \pm 5,1$ points respectively. At the stage of the relief of acute psychotic symptoms in the patients without comorbid somatic disorders the average indicators of the quality of life related to the physical health made up $58,7 \pm 18,7$ points, related to the psychological quality of life – up to $44,3 \pm 19,4$ points, related to the social quality of life – up to $21,5 \pm 24,4$ points, related to the environment – up to $43,0 \pm 13,3$ points, the average indicator according to the cluster "Positive Emotions" was $10,4 \pm 5,0$ points, "Cognitive Functions" - up to $10,6 \pm 4,9$ points, "Negative Emotions" – up to $14,1 \pm 3,4$ points, "Ability to Perform Everyday Tasks" - up to $9,1 \pm 4,2$ points, "Working capacity" – $10,7 \pm 5,5$ points, "Personal Relations" - $10,2 \pm 3,7$ points, "Practical Social Support" - up to $6,8 \pm 4,6$ points, "Opportunities for Recreation and Entertainment, their Use" - up to $11,4 \pm 5,0$ points, "Emotional Adequacy" - up to $17,1 \pm 5,2$ points, "Self-orientation and Reality-orientation" - up to $16,3 \pm 4,8$ points, "Communication-related Experiences" -

up to $12,2 \pm 5,2$ points, "Self-control and Distraction from Unpleasant Experiences" - up to $14,5 \pm 4,8$ points, "Self-help and Psychoprophylaxis" - $18,4 \pm 5,0$ points; in the patients with comorbid disorders that appeared before the onset of schizophrenia - $53,0 \pm 14,8$ points, $37,8 \pm 19,7$ points, $16,4 \pm 20,6$ points and $41,7 \pm 14,9$ points, $9,1 \pm 4,4$ points, $9,4 \pm 4,3$ points, $12,2 \pm 3,7$ points, $8,4 \pm 4,5$ points, $9,1 \pm 4,8$ points, $9,5 \pm 3,9$ points, $6,3 \pm 4,3$ points, $19,9 \pm 5,3$ points, $16,0 \pm 5,1$ points, $16,6 \pm 4,5$ points, $11,1 \pm 4,9$ points, $13,4 \pm 5,1$ points, $17,2 \pm 5,1$ respectively; in the patients with comorbid somatic disorders that arose after the onset of schizophrenia - $51,2 \pm 15,0$ points, $35,4 \pm 21,1$ points, $16,1 \pm 20,8$ points and $41,8 \pm 13,8$ points, $8,9 \pm 4,6$ points, $9,6 \pm 4,9$ points, $11,1 \pm 4,0$ points, $8,1 \pm 3,9$ points, $8,9 \pm 5,1$ points, $9,4 \pm 3,5$ points, $6,2 \pm 4,1$ points, $9,8 \pm 5,3$ points, $15,3 \pm 5,5$ points, $16,1 \pm 4,9$ points, $10,9 \pm 5,1$ points, $13,2 \pm 5,4$ and $16,7 \pm 5,0$ points respectively. At the stage of remission formation in the patients without comorbid somatic disorders the average indicators of the quality of life related to the physical health made up $55,5 \pm 16,4$ points, related to the psychological quality of life - $48,0 \pm 19,1$ points, related to the social quality of life - up to $24,2 \pm 29,4$ points, related to the environment - up to $49,6 \pm 15,6$ points, the average indicator according to the cluster "Positive Emotions" in the patients without comorbid somatic disorders at the stage of the remission formation was $11,3 \pm 4,6$ points, "Cognitive Functions" - $11,3 \pm 5,2$ points, "Negative Emotions" - $14,6 \pm 3,1$ points, "Ability to Perform Everyday Tasks" - $9,3 \pm 4,2$ points, "Working Capacity" - $11,2 \pm 5,4$ points, "Personal Relations" - $10,0 \pm 4,1$ points, "Practical Social Support" - $8,1 \pm 5,0$ points, "Opportunities for Recreation and Entertainment, their Use" - $12,3 \pm 4,6$ points, "Emotional Adequacy" - $18,1 \pm 4,8$ points, "Self-orientation and Reality-orientation" - $16,4 \pm 4,7$ points, "Communication-related Experiences" - $12,6 \pm 5,2$ points, "Self-control and Distraction from Unpleasant Experiences" - $15,0 \pm 4,9$ points, "Self-help and Psychoprophylaxis" - $18,7 \pm 5,0$ points; in the patients with comorbid somatic disorders that appeared before the onset of schizophrenia - $47,1 \pm 15,4$ points, $38,5 \pm 10,7$ points, $17,6 \pm 27,3$ points and $46,8 \pm 15,9$ points, $9,9 \pm 4,9$ points, $9,8 \pm 4,9$ points, $13,5 \pm 3,4$ points, $8,4 \pm 4,6$ points, $9,5 \pm 5,3$ points, $9,2 \pm 4,2$ points, $7,1 \pm 4,7$ points, $10,5 \pm 5,3$ points, $16,8 \pm 4,8$ points, $16,5 \pm 4,5$ points, $11,5 \pm$

5,0 points, $13,9 \pm 5,1$ points, $17,5 \pm 4,9$ respectively; in the patients with comorbid somatic disorders that arose after the onset of schizophrenia - $54,1 \pm 15,9$ points, $42,2 \pm 21,7$ points, $20,3 \pm 28,1$ points and $46,7 \pm 16,0$ points, $10,2 \pm 5,1$ points, $10,5 \pm 4,9$ points, $13,7 \pm 3,6$ points, $8,6 \pm 4,6$ points, $10,0 \pm 5,3$ points, $9,7 \pm 4,1$ points, $7,6 \pm 4,8$ points, $11,1 \pm 4,8$ points, $16,8 \pm 5,0$ points, $15,9 \pm 4,8$ points, $11,6 \pm 5,2$ points, $14,1 \pm 5,5$ and $17,8 \pm 5,0$ points respectively.

Conclusion. While studying the quality of life of 325 men with paranoid schizophrenia and different types of comorbid somatic disorders using the scale of the quality of life QL-26 and QL-SM it was found that at the stage of the disease exacerbation the patients' quality of life was low and did not differ significantly in various groups of somatic comorbidity. At the stage of the relief of acute psychotic symptoms and the remission formation the patients' life quality improved but its dynamics was irregular in the patients with different variants of somatic comorbidity. The worst quality of life at the stage of the relief of acute psychotic symptoms was observed in the patients with comorbid somatic disorders that arose after the onset of schizophrenia, and at the stage of remission - in the patients with comorbid somatic disorders which appeared before the onset of schizophrenia. Patterns of dynamics of the quality of life coincide with the patterns of dynamics of psychopathological symptoms, and the results of their research can be used for assessment of treatment and rehabilitation potential.

Key words: schizophrenia, quality of life, comorbid somatic disorders.

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SOCIAL AND CLINICAL CHARACTERISTICS OF TUBERCULOUS MENINGITIS IN HIV-INFECTED PERSONS OF VINNITSA REGION

Summary. The dynamics of the incidence of tuberculous meningitis was investigated in HIV-infected residents of Vinnitsa region for the period 2002-2013, social status, clinical symptoms, and consequences of the disease were analyzed. It was established that the vast majority of patients were males – 81,0%, unemployed – 73,0%; composition dominated by professional workers – 62,5%, in prisons were still 34,4% of the patients, alcohol abuse – 31,2% and 53,1% observed drug use. Most was determined disseminated tuberculosis – 43,7%. Onset of disease was often subacute (58,7%), symptoms of intoxication are defined in 2-3 times more likely occur earlier and last for more than 5 months of severe meningeal symptoms. These spinal puncture is an important criteria for the diagnosis of TM. Treatment is inefficient.

Key words: tuberculosis, meningitis, HIV-infected.

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LIFE QUALITY ASSESSMENT OF CHILDREN AT DIFFERENT AGES WITH ATOPIC CHEILITIS AND THEIR FAMILIES

Summary. There was conducted the life quality index rating of 61 children with atopic cheilitis of various severity, including 19 children with an isolated form, and 42 children with symptomatic cheilitis against the background of atopic dermatitis. The cheilitis against the background of atopic dermatitis causes more pronounced deterioration in the life quality of children and their families than the isolated form of

the disease at the same severity of their clinical courses. Worsening of the patient's health state was prevalent in the impact structure of the isolated form of atopic cheilitis into certain areas of life; the least influence was exerted on the children's way of life and leisure, as well as on the process of their treatment. The children's health state and their activities declined considerably at the patients with cheilitis against the background of atopic dermatitis, the least effect was exerted on the disease treatment process and relationships with other children. The most significant problem for parents of these children was increase the cost of treatment, the atopic cheilitis had the least influence on family relationships and job of parents.

Key words: atopic cheilitis, life quality, index rating, children of different ages, dermatological questionnaires, IDQOL, CDLQI, FDLQI.

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PECULIARITIES OF PARODENTIUM STATUS AND HYGIENE OF MOUTH CAVITY IN PATIENTS WITH CHRONIC PERIODONTITIS AGAINST THE BACKGROUND OF CHRONIC TONSILLITIS

Introduction. Researches and clinical evidence testify that the damage caused by periodontal diseases to supporting tissues of a tooth in youth, becomes in the future almost defective. In the course of life this disease results in significant destruction of dental apparatus and completely deprives the working-age population of teeth long before an old age. Anatomical and physiological proximity of periodontal tissues, oropharynx and digestive tract, a common innervation and humoral regulation create

opportunities for periodontal involvement in the pathological process under the conditions of pathology of the oropharynx and the gastrointestinal tract.

Anatomical and histological features of organs and tissues of the oropharynx and its microflora may lead to etiologic and clinical compatibility of inflammatory diseases of parodontium and tonsils. At present, not enough attention is paid to the relationship of ENT organs pathology, including chronic tonsillitis (CT) and chronic periodontitis (CP). On the basis of clinical, microbiological studies to learn the features of periodontal lesions under the conditions of chronic generalized periodontitis with chronic tonsillar pathology.

Materials and methods. To characterize the state of periodontal tissues we have conducted researches on the basis of specially designed medical card of a dental patient. It included the following: complaints, dental history, general medical history, medical examination, detection of periodontal tissues pathology.

At the same time we detected the existence of a patient's background disease, in our case it is chronic tonsillitis. At first we used anamnestic survey data: the presence of two or more sore throats in patients per year is one of the criteria for diagnosis of chronic tonsillitis. Secondly we applied tool methods of patient examination. During pharyngoscopy following signs were evaluated:

- Hyperemia and roll-shaped thickening of edges of faucial pillars;
- Cicatricial adhesions between the tonsils and faucial pillars;
- Loosened or cicatricial-modified and indurated tonsils;
- Cheesy tonsil stones or liquid pus in the gaps of the tonsils;
- Regional lymphadenitis - increase of extra-maxillary lymph nodes.

With the purpose of objective estimation of changes in fabrics of parodontium, and determinations of degree of inflammation of gums used a index PMA. For the estimation of the hygienical state of cavity of mouth used the Hygienical index of Green - Vermillion.

A presence and intensity of sanguifluousness of gums estimated during measuring depths the personal computer by a parodontal probe in area of all teeth. Intensity of sanguifluousness of gums was estimated for 3th to the ball scale:

The index of sanguifluousness was expected by dividing of the got sum of bulk-tankers by the amount of the inspected teeth. As a result of division got the average of intensity of sanguifluousness of gums.

Results. Somatic pathology was not found in patients of I group in the course of questionnaire survey. Somatic pathology was found in 22 patients (62,9%) of II group in the course of questionnaire survey, somatic pathology was found in 27 patients (77,1%) of III group without taking account tonsillar pathology. And according to many researchers generalized periodontitis is not an independent disease and always occurs on the background of somatic pathology, then it is possible that in III group the etiological factor of GP is chronic tonsillitis.

In the course of our study, we found out that concurrent dental diseases in patients with GP and CT are observed much more frequently than in patients with GP without chronic tonsillar pathology. Dental caries and its complications in patients with GP and CT are observed in 27 (77.1 %) patients , whereas in patients with GP in 16 (45.7 %) patients. Diseases of the oral mucosa (here we had chronic recurrent aphthous stomatitis and recurrent fungal infections of the mouth cavity) in 17 (48.6 %) patients with GP and CT and in 11 (31.4 %) patients with GP without chronic tonsillar pathology. Occlusion pathology was observed in 8 (22.9%) patients of I group and 6 (17.1 %) of II group. A larger percentage of maxillo-temporal joint lesions was observed also in the group consisting of patients with GP and CT - 7 (20 %) patients and in the group consisting of patients with chronic GP without tonsillar disease - 5 (14.2 %) patients, which in our opinion is the result of a greater percentage of secondary adentia in the basic group (patients with GP and CT).

In determining the parameters of periodontal status and oral hygiene it was established that in patients with GP on the background of chronic pathology of tonsils almost all studied indicators are identified in a significantly greater percentage of patients than in patients with GP without chronic pathology of the tonsils.

Conclusions. The results of our research with index determination testify about higher scores in the patients of the basic group, indicating about unsatisfactory oral hygiene and more widespread and deeper process in periodontal tissues due to GP on

a background of chronic tonsillitis. It is planned to continue further study concerning the dependence of chronic periodontal manifestations on the severity of chronic tonsillitis.

Key words: chronic periodontitis, chronic tonsillitis, hygiene of mouth cavity, parodontium.

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FEATURES OF FAMILY RESOURCE OF REFERENCE RELATIVES OF PATIENTS WITH SCHIZOPHRENIA

Summary. The resource typology of family support in reference relatives of patients with schizophrenia was studied. It is established that in the early stages of the disease recorded an adequate level of resources, with the extension of the duration of the disease prevails limited resources and low family support.

Key words: paranoid schizophrenia, the patient, a relative reference, family support resources.

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CLINICAL DETERMINANTS, WHICH LEAD TO NEGATIVE DYNAMIC OF THE QUALITY OF LIFE IN PATIENTS WITH THE IST AND IIND STAGES OF CHRONIC CEREBRAL ISCHEMIA

Summary. The article reports the results of the authors research of quality of life of 128 patients with the Ist and IInd stages of chronic cerebral ischemia. SF-36 questionnaire was used to study the quality of life. It was shown that the quality of life in patients with chronic cerebral ischemia depends on severity of motor, cognitive and affective disturbances, comorbid asthenia and fatigue.

Key words: quality of life, chronic cerebral ischemia.

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SOCIO-MEDICAL FEATURES OF MEN AND WOMEN, PATIENTS WITH SCHIZOPHRENIA

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Summary. In order to study the social and medical characteristics of men and women with schizophrenia, conducted a survey and study of medical records of 210 men and 210 women with schizophrenia. As a result, gender differences were found in the social and health characteristics: prevalence among men inhabitants of the cities, and among women - rural, extremely poor socialization and involvement in work is closely associated with high invalidizatsiyi, low educational level (especially in women), better labor history and worsening labor realization of women to the extent of the disease compared with men significantly worse mikrosotsialnoy adaptation in men compared to women. We found that the socioeconomic status of patients with schizophrenia (except educational level) shows no significant

dependence on the objective socio-economic conditions and is derived from the schizophrenic defect. Established that patients with schizophrenia exposed to abnormal lifestyle extremely high prevalence of smoking (especially men), which is associated with features of the disease and almost no reaction to restrictive social and educational activities, and alcoholism.

Keywords: schizophrenia, social and medical characteristics, the gender factor.

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SOCIO-MEDICAL CHARACTERISTICS OF PATIENTS WITH RHEUMATOID ARTHRITIS

Introduction. Steadily constant joint disease (chronic pains, deformation, dysfunction) cause the early disability of people with RA, reduction of the quality of life, affects the psyche and social well-being of patients, and is accompanied by a large financial burden. The aim of this research was to study the characteristics of antecedent history, social and health factors and lifestyle of patients with RA if compared with healthy individuals.

Materials and methods. We have examined 146 patients with RA who were undergoing inpatient treatment in the rheumatology department of Vinnytsia regional clinical hospital named after M.I. Pyrogov. Comparison group consisted of 71 apparently healthy people, provided that the main group and the comparison group were identical in age and gender composition. The average age of patients was $49,9 \pm 12,9$ years, there were 80,1 % of women, duration of disease was $8,7 \pm 7,2$ years, disease appeared at age $41,2 \pm 13,5$ years.

The research complied with the requirements of Helsinki declaration (1989) of the World Medical Association and was approved by the Ethics Committee of the Vinnitsa National Medical University. Written informed consent was received from each patient in order to participate in the research.

The diagnosis of RA has been established according to the working classification of association of rheumatologists of Ukraine (2002), recommendations of ACR (1987) and ACR / EULAR (2010). Data collection took place by interviewing by a specially developed questionnaire.

Results. The debut of RA is characterized by suddenness, and a quarter of patients associate it with the influence of psycho-traumatic factors. A reliable connection between RA, comorbidity, cardiovascular system and gastrointestinal tract diseases ($p < 0,001$) and allergy ($p < 0,05$) was found. A tendency of “rejuvenation” of RA disease was established, afflicting mainly people of working age to 40 years (41,8%). Early detection of RA was found in every second patient (50,7%), and well-timed disease modifying therapy was appointed only for 43,1% of individuals. Lower quality of life if compared with healthy people was found in patients with RA, reduced working capacity and social status, low self-assessment and imperfect interpersonal relationships in micro social environment.

Conclusion. The disease which is accompanied by a range of significant negative subjective (pain) and objective manifestations (restriction of movement, decreased ability of self-service, reduction of working capacity and disability), encourages the patient to review his own social role, importance and potential opportunities downwards. Specific changes in psychological activity caused by RA change the attitude of the individual to himself and to his social role as well as to his relation to micro social environment and also, certainly, the attitude of others to the patient. Above described factors, in our opinion, show these tendencies. Therefore, comparison of data received during the study of different social and medical characteristics among patients with RA and among healthy individuals allows to detect risk and anti-risk factors of disease, to expand understanding of possible causes

and factors that facilitate or hinder the development of the disease, and to develop a set of measures for primary prevention of this disease.

Key words: rheumatoid arthritis, anamnesis, socio-medical characteristics, way of life.

Scientific reviews

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CLINICAL ASPECTS OF SOTALOL USAGE

Summary Among all the general problems of public health the cardiac abnormalities make it difficult to manage and treat patients suffering from arterial hypertension (AG). Antiarrhythmic therapy involves appropriate etiotropic treatment. Beta-adrenergic blocking agents (BAB) are the agents of choice due to their antihypertensive, anti-ischemic and antiarrhythmic action and established effectiveness for cardiovascular diseases prevention.

In accordance with European experts (ESC/ESH, 2007), BAB is the agent of choice in the course of AG and stenocardia, old myocardial infarction, cardiac failure, tachyarrhythmia, glaucoma and pregnancy. BAB are effective for extrasystole control connected with sympathetic activation including stress induced arrhythmia.

Sotalol belongs to the III class of antiarrhythmic drugs with the combination of β -adrenoreceptor blocking agent characteristics in accordance with Vaughan-Williams classification. BAB effect of Sotalol is evident while a single ingestion of 20 mg drug

dose. The effectiveness depends on a drug dose. The antiarrhythmic activity of Sotalol is evident while an ingestion of 160 mg or 320 mg drug dose a day with a rate of 2 times a day. The antiarrhythmic effect of Sotalol is evident in an hour, has its maximum level in 2,5-4 hours and lasts up to 24 hours after its ingestion. When intravenous medication of 40 mg drug dose the effect is evident in 5 min and lasts for 90-120 minutes.

Considering established clinical effectiveness of Sotalol as a drug that has characteristics of β -adrenoreceptor blocking agent and antiarrhythmic drug of the III class we can draw the conclusion as follows:

- Sotalol is a modern quality antiarrhythmic drug of the III class with the combination of β -adrenoreceptor blocking agent characteristics,
- Considering the results of investigation and their contradictory conclusions, Sotalol needs further academic and practical study,
- Sotalol is a safe drug for practical usage in cardiology, neonatology, pediatrics subject to following indications for drug usage,
- When taking Sotalol you should remember about gender particularities of Sotalol effect on organism,
- At present Sotalol needs extension of spectrum usage for nosology of cardiovascular diseases, as well as neurology,
- As to prevent the proarrhythmogen effect of Sotalol patients are recommended to do electrocardiography Holter monitoring as an obligatory control method for fatal arrhythmia detection.

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THE ROLE OF THE RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM IN LIVER DISEASE

Summary. In a review article presents the modern literature data about the role of the renin-angiotensin system (RAS) in the pathogenesis of liver diseases. Perspective inhibitors of this system, as a pathogenetic treatment of chronic diffuse liver diseases that are accompanied by portal and arterial hypertension.

RAS is the hormonal system of humans and mammals, which regulates blood pressure and blood volume in the body. It is known at liver diseases take place expression of both classical components of RAS (renin, angiotensin-converting enzyme (ACE) inhibitors, angiotensin (AT) II and AT1 receptors) and components of alternative RAS - APF2, AT1-7 and mass-receptors. There is a view that the classical components of the RAS may contribute to the development of liver fibrosis, whereas alternative can be activated to maintain normal homeostasis.

Thus, given the data undeniable facts affecting the level of RAS using ACE inhibitors or blockers of angiotensin II, can achieve a positive therapeutic effect. However, the need to maintain a balance between the possible beneficial effects and potential side effects of such therapy as compensatory mechanisms are activated RAS needed to maintain adequate hemotsyrkulyatsiyi.

Today we know that liver stellate cells have a key role in the liver fibrogenesis. AT II initiates the activation and differentiation of inactive stellate cells into myofibroblasts. Moreover, AT II contributes to the reduction of myofibroblasts, their proliferation, activates releasing of proinflammatory cytokines and promotes the accumulation of extracellular matrix. Despite the fact that both types of receptors for AT II (AT1 and AT2) are expressed in the liver, AT1 receptors are responsible for all effects mediated by AT II.

The insulin resistance and hyperinsulinemia are important links in the pathogenesis of chronic liver disease, which stimulates the production of growth factors (platelet, insulin, fibroblast growth factor), which leads to proliferation of smooth muscle and myofibroblasts, and, consequently, to vasoconstriction. Insulin also stimulates the

synthesis of endothelin, leads to activation of the sympathoadrenal and RAS, increases Na^+ reabsorption in the proximal tubule and distal nephron, at different levels affecting the pathogenesis of hypertension.

Today it is considered the most perspective direction in the treatment of liver fibrosis is to reduce the activity of the RAS, which, as noted above us, plays one of the important links in the pathogenesis and progression of liver fibrosis.

Liver fibrosis is considered as a reparative process in response to the injury which may be potentially reversible. Therefore, early determination of the liver fibrosis allows to administrate the adequate pathogenetical therapy on time, aimed at slowing the progression and prevent the development of liver cirrhosis, hepatocellular failure and hepatocellular carcinoma.

Thus, in the regulation of liver fibrogenesis and in pathogenesis of portal hypertension take place activation of local RAS.

Experimental research on the study of molecular mechanisms of liver regeneration in chronic diffuse liver disease on the background of the introduction of ACE inhibitors will improve pathogenetical therapy of this disease.

Conclusions. RAS is involved in the regulation of liver fibrogenesis and pathogenesis of the portal hypertension. The perspectives of the treatment of chronic liver disease and portal hypertension is the administration of ACE inhibitors, which are not metabolized in the liver.

Key words: liver disease, pathogenesis, renin-angiotensin system.

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BREAST CANCER. MODERN METHODS OF DIAGNOSIS USING ONCOMARKERS, SPECIFIC IMMUNOTHERAPY

Summary. Statistical data of recent years show a steady increase in the incidence and mortality from the breast cancer in different countries.

Currently this pathology takes first place in the structure of morbidity for women's, and the frequency of occurrence is steadily growing in the different aged groups.

Considerable efforts oncologists to combat this disease is still not led to the expected result, since over 50% of cancer patients addressed to the hospitals in the later stages of the disease.

The article analyzes the modern literary data about the breast cancer, etiologic factors of disease, modern methods of diagnosis and treatment as well as preventive measures aimed at early detection of this disease and the provision of timely medical care.

Key words: breast cancer, monoclonal antibodies, treatment algorithm, active and passive specific immunotherapy.

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MODERN VIEWS UPON PATHOGENESIS OF ACUTE ALCOHOLIC HEPATITIS AND POSSIBILITY OF ITS TREATMENT

Acute alcoholic hepatitis (AAH) - the degenerative and inflammatory liver disease caused by alcohol intoxication, morphologically characterized mainly by necrosis,

inflammatory reaction with infiltration of portal fields mainly polynuclear leukocytes and the appearance of hepatocytes in alcoholic hyaline (Malory cells).

There is a hypothesis "double strike" in the pathogenesis of alcoholic liver disease. On the early stages of the alcohol damage an intense influence of cytokines (interleukins, tumor necrosis factor α - (TNF- α), interferons, chemokines, transforming growth factor β (TGF- β), colony stimulating factors etc.) on hepatocytes, which increases the permeability of the membrane of mitochondria, promotes the release of reactive oxygen species and apoptosis of hepatocytes - "first strike."

The intact, due to damaging effect of TNF- α , hepatocytes activate multiple adaptive response that allows cells to survive. The "Second strike" of hypothesis inhibits this adaptive ability and also leads to apoptosis. However, even if in the result of the "first strike" hepatocytes can not survive, they become vulnerable to various pathogenic effects. This leads to partial depolarization of the inner mitochondrial membrane and in case of violation of transmembrane ion gradients the cell death by necrosis.

The data on the pathogenic role of cytokines in the development of the AAH were the impetus for the study of the effectiveness (of this category of patients) of the drugs with anticytokines action.

The therapy by glucocorticosteroids suppresses inflammatory process by inhibiting the action of transcription factors such as activating protein 1 (AP-1) and NF- κ B. In the presence of alcoholic hepatitis, these effects are manifested in the form of reduced levels of circulating proinflammatory cytokines IL-8 and TNF- α , soluble adhesion molecules (soluble intercellular adhesion molecules - SICAM-1) in the venous blood of the liver and the expression of soluble adhesion molecules (SICAM-1) on membranes of hepatocytes.

The pentoxifylline inhibits the production of a number of proinflammatory cytokines (TNF- α , IL-1, IL-2, IL-6, IL-8 and interferon α , β), involved in the development of inflammation and immune response. The drug inhibits the production of TNF- α by inhibiting effect on the transcription of the gene which is responsible for its synthesis.

The alcohol intoxication and the AAH still remain a serious threat not only to the health and life of modern man, but the threat of the whole society.

Numerous studies point to the prospects and performance of the pathogenetic treatment of the AAH. Therefore, further study of features of the AAH pathogenesis can guide researchers to find new drugs to eliminate the basic pathogenesis and prevention of life threatening complications.

Chronicle

Bondar S. A., Psyuk S. K. TO THE 80 ANNIVERSARY OF CHAIR OF SKIN AND VENEREAL DISEASES OF VINNYTSIA NATIONAL MEDICAL UNIVERSITY OF N. I. PIROGOV

Masik N. P. WORD ABOUT THE TEACHER

THE RESOLUTION OF VI PLENUM OF SCIENTIFIC ORGANIZATION OF PATHOPHYSIOLOGISTS OF UKRAINE (on September 23-25 in 2014, Vinnytsia)

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