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EXPERIMENTAL MEDICINE AND BIOLOGY

Antonenko A.M.

HYGIENIC EVALUATION OF NOVEL FUNGICIDES FLUXAPYROXAD, PENTHYOPIRAD, ISOPIRAZAM AND SEDAXAN INDUCING MICROSOMAL OXIDATION AND SUBSTANTIATION OF THEIR RELATIVELY SAFE EXPOSURE LEVELS IN ATMOSPHERIC AIR

Key words: fungicides, atmosphere air, relatively safe exposure levels.

Among the factors that deteriorate the health status of the Ukrainian population, chemical plant protection products are holding one of the leading positions. The aim of the study was to provide hygienic evaluation and substantiation of permissible levels of isopyrazam, penthiopyrad, sedaxan, and fluxapyroxad in the atmospheric air. The methods of field experiments, empirical and theoretical research techniques were used in the work. The substances investigated are low volatility compounds with short half-life period in the air, and, accordingly, they unlikely get the atmospheric air and remain for a long period time that minimizes the probability of their entering the human body by inhalation. We calculated the safe exposure levels of isopyrazam, penthiopyrad, sedaxan, fluxapyroxad – 0,05; 0,02; 0,03 and 0,01 mg/m³, respectively, as well as gave the grounds for this calculation. We have found out the permissible concentrations of these test compounds (isopyrazam, penthiopyrad, sedaxane and fluxapyroxad) used for treating crop do not exceed the hygienic standards in the atmospheric air.

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Paterega N., Ogonovsky R., Mokryk O.

***INVESTIGATION OF THE INFLUENCE OF FLUCTUATING CURRENTS
AND APROTININ ON THE INFLAMMATORY REACTION OF TISSUE BASOPHILES
IN EXPERIMENTAL CONDITIONS***

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Since floating currents at the initial stages of inflammation are capable of restricting and suppressing inflammatory processes, it would be possible to strengthen their therapeutic effect by fluctuophoresis of drugs that have anti-inflammatory effects, in particular, aprotinin. Brain development of the inflammatory process is associated with the effect on the reaction of tissue basophils that emit inflammation mediators through degranulation. The aim of the research was to study the mechanism of influence of fluctuarization and fluctuophoresis with aprotinin on the process of degranulation of tissue basophils in the experimental process of aseptic inflammation. Animals of one experimental group (EG1) conducted fluctuarization with the device of low-frequency electrotherapy "Radius-01" (Belarus), and the second (EG2) - fluctuophoresis with a preparation on the basis of aprotinin. Degree of degranulation was determined by microscopic counting of four types of tissue basophils in film preparations. The results of the study showed that in animals that had fluctuophoresis with aprotinin (EG2), tissue basophils with dense and diffuse placements of granules in the cytoplasm were detected (the lowest degree of degranulation was from 47.0% to 37.5%, which means 20.5 % less than after fluctuarization and by 27% than in the control group. The obtained data indicate a pronounced anti-inflammatory effect of fluctuophoresis with aprotinin due to inhibition of functional activity of tissue basophils.

This article is a fragment of the theme of scientific research work of Department of Surgical Dentistry and Maxillofacial Surgery of Danylo Halytsky Lviv National Medical University "Search, implementation and ways to improve methods of diagnosis and treatment of inflammatory, traumatic processes, defects and deformations of maxillofacial area" (№ state registration: 0110U008228).

Introduction

Rational application of physiotherapeutic procedures in various pathological processes provides sedative, analgesic, anti-inflammatory, antiseptic, desensitizing, haemostatic and anti-oedema effects, changing microcirculation and rheology, peripheral and central hemodynamics, tissue trophic and metabolism, immunobiological and compensatory adaptive processes, and reactivity of the organism.

In today's dental practice the methods of physiotherapeutic influence are widely implemented, which, in combination with other therapeutic and prophylactic measures, can inhibit the development of inflammatory processes in the maxillofacial area.

Fluctuation for the therapeutic purposes uses sinusoidal AC low power and low voltage or partially rectified, or rectified, with chaotically altered the amplitude and frequency from 100 Hz to

2000 [1]. Fluctuating currents cause pronounced local reactions, increase reparative regeneration of tissue structures [2, 3]. In our opinion, the use of drugs that have anti-inflammatory action, through fluctuophoresis, which increase their therapeutic effect, is quite promising.

According to professional literature, in the early stages of inflammation fluctuating currents are able to limit and suppress inflammation, and this may be due to the influence of the reaction of tissue basophiles (TB), which are one of the effector cells that secrete inflammatory mediators (histamine, serotonin, prostaglandins, etc.) by degranulation [4].

Tissue basophiles (TB, mast cells, mastocytes, and labrocytes) are highly specialized immune cells of the connective tissue of vertebrate, analogues of basophiles of blood. They play an important role in inflammatory reactions.

It is known that the main function of mast cells is the accumulation of chemical mediators of inflammatory reaction. Labrocytes contain a large number of cytoplasmic granules, the content of which during activation (for example, during an allergic reaction) is released into the surrounding tissue (degranulation). Other components of the granules of smooth cells are histamine, which increases vascular permeability, neutral protease, eosinophilic chemotoxic factor of anaphylaxis (ECF-A). Degranulation of mast cells also occurs as a result of complementary molecules that are involved in immune responses. Histamine causes the contraction of smooth muscle tissue (mainly in bronchioles), dilates blood vessels and increases their permeability (mainly postcapillary venules). After the excretion of histamine, it is immediately inactivated [5].

Aprotinin is an inhibitor of proteolysis and kininogenesis; it has anti-inflammatory, anti-fibrinolytic and anti-shock effects. The ability of aprotinin to reduce the production of pro-inflammatory interleukins and, simultaneously, to stimulate the formation of anti-inflammatory interleukins, allows it to be used to reduce the effects of surgical trauma and postoperative pain syndrome [6].

The purpose of our study was to investigate the effect of fluctuorization and fluctuophoresis with aprotinin on the process of degranulation of tissue basophils in the experimental process of aseptic inflammation.

Materials and methods

For the purpose of studying the anti-inflammatory effect of fluctuating currents and aprotinin, 42 Wistar female rats weighting 180-200 g were divided into 3 experimental groups, each of which was divided into 2 subgroups, depending on the time the animals were removed from the experiment. For 48 hours before the experiment, animals were subjected to depilation of sites in place of physiotherapeutic effect. All animals were subjected to modelling an acute aseptic inflammation of the intestinal mesentery using a single retroperitoneal injection of 0.1 ml of 1% solution of carragenin [7]. After 30 minutes following carrageenan solution injection, the animals of the first experimental group (EG1- 14 rats) were exposed to fluctuorization using low electrotherapy device "Radius - 01" (Belarus) and the second experimental group of animals (EG2 - 14 rats) was exposed to fluctuophoresis with the drug on the basis of aprotinin ("Contriven", Biopharma, JSC (Kyiv)). The control group was composed of animals without corrective effect on the inflammatory process (CG - 14 rats).

30 minutes after the physiotherapeutic effect on 7 animals from, the first subgroups of EG1 and EG2 under general anesthesia was taken from the experiment and carried out an intestinal mesentery sampling for determination of the degree of degranulation of the labrocytes, after 60 minutes the animals from the second subgroup of EG1 and EG2. The rats from the control group, 7 animals from each subgroup in terms of 60 and 90 minutes from the beginning of the experiment were taken from the experiment. The choice of such terms of study was due to the fact that in the development of carrageenan inflammation in the first 30 – 90 minutes, the most involved are histamine and serotonin [8].

To obtain free peritoneal labrocytes, a piece of mesentery was consolidated on a slide, fixed in a 10% neutral formalin, specimen were dyed with toluidine blue, and examined under a microscope with an optical zoom of 1000 [9]. Tissue basophiles (TB) were identified and counted according to the types: the first type - with low content of granules in the cytoplasm located near the membrane; The second type - with an average content of granules, located diffusely; The third type is large cells with dense and diffuse placement of granules in the cytoplasm; The zero type is degranulated cells with signs that the integrity of the cytoplasm membrane is impaired [10]. The degree of degranulation was evaluated as the ratio of the number of zero-type cells to the total number of detected cells, expressed in a percentage.

All studies were carried out according to the Law of Ukraine "On Protection of Animals from being Abused" No. 3447-IV, the European Convention for the Protection of Vertebrate Animals used for Research or Other Scientific Purposes of 18.03.1986, the Order of the Ministry of Education, Science and Youth And sport of Ukraine "Procedure for conducting scientific establishments of experiments, experiments on animals".

The statistical processing of the results of the study was carried out by calculating the arithmetic mean, mean square deviation, and compared with the Student criterion. The probability of the obtained results was at the level of significance not less than 95%, $p \leq 0.05$.

Results and discussion

Results of determining the content of tissue basophiles in the inflammatory site are presented in Table 1.

Table 1
The content of tissue basophiles in aseptic carrageenan inflammation and its correction by fluctuating currents and aprotinin.

Animal groups	Types of tissue basophiles	Amount of tissue basophiles			
		The first subgroup (n=7)		The second subgroup (n=7)	
		Abs.	%	Abs.	%
Control Group (CG) (n=14)	1	140,6±6,37	27,1±0,74	150,4±6,95	29,0±0,75
	2	91,1±6,94	17,6±0,63	91,0±6,38	17,5±0,63
	3	10,1±1,07	1,9±0,23	11,1±1,57	2,1±0,24
	0	277,0±16,79	53,4±0,83	267,2±15,07	51,4±0,83
Experimental group (EG1) (n=14)	1	152,1±11,52**	31,8±0,8**	158,3±8,73**	33,1±0,81**
	2	80,0±8,21	16,7±0,65	82,4±8,34	17,2±0,65
	3	13,1±1,35*	2,8±0,28*	12,0±1,29	2,5±0,27
	0	233,0±8,6**	48,7±0,86**	225,4±7,52**	47,2±0,86**
Experimental group (EG2) (n=14)	1	158,1±7,99**#	35,7±0,86**, ##	138,0±10,36**, #	38,1±0,96**, ##
	2	64,0±4,8**, #	14,5±0,63**, #	75,4±6,8**, ##	20,8±0,81**, ##
	3	12,1±1,46*	2,8±0,29*	13,0±0,82**, #	3,6±0,37**, #
	0	208,0±14,55**	47,0±0,9**	135,6±11,13**, #	37,5±0,96**, ##

Note: * - Reliable difference with control group with probability > 95% ** - Reliable difference with control group with probability > 99%, # - Reliable difference from EG1 with probability > 95%, ## - Reliable difference with EG1 with probability > 99%.

In animals that had fluctuophoresis with aprotinin (EG2), after 30 minutes of physiotherapy (first

subgroup), 35.7 % of the first type of TB, 14.5 % of the second type of TB, 2.8% of the third type of TB were obtained from the abdominal cavity , The rest - TB of zero type. Similar rates at the same time in the animals of the first experimental group were 31.8 %, 16.7 %, 2.8 % and 48.7%, respectively, and in the control group it was 27,1 %, 17,6 %, 1,9% and 53,4 % (Fig. 1).

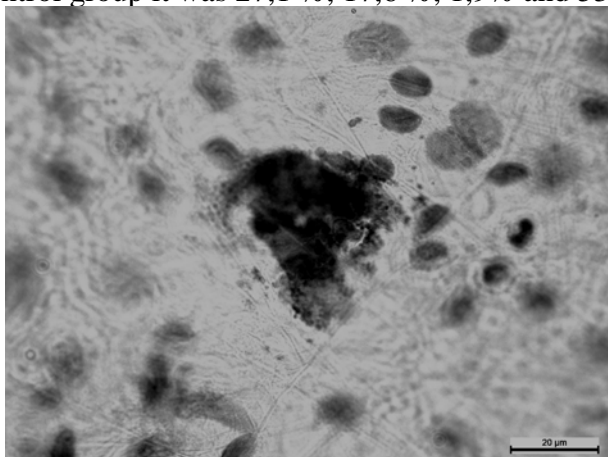


Figure 1. Degranulated tissue basophil with violation of the integrity of the cytoplasmic membrane (type 0) in the rat of the control group (CG). Toluidine blue.

It was established that the degree of degranulation of TB in EG1 was 48.7 %, which is 8.8 % lower than the control group (53.4 %) ($p < 0.01$), and in EG2 – 47 % and 12 % respectively ($P < 0.01$)

60 minutes after fluctuorization, the animals of the first experimental group (EG1) received TB from the first, second, third and zero type respectively 33.1 %, 17.2 %, 2.5% and 47.2 %. The degree of degranulation was 47.2 %. It is 8.2 % less than in the control group. In animals of the second experimental group, after fluctuophoresis with aprotinin, 38.1 % of the first type of TB were received, 20.8 % were of the second type, 3.6% of the third, and the rest - of zero. The degree of degranulation was 37.5 %, which is 27 % less than in the control group.

On the background of fluctuarization (EG1) TB of first type were mainly manifested (the most degranulation degree - of 31.8 % (first subgroup) to 33.1 % (second subgroup), the second type cells were present in small amounts (up to 17.2 %) during the whole period of observation. The third type of TB did not exceed 3%.

During the studying of the intensity of degranulation of TB with carragine peritonitis on the background of using the fluctuophoresis with aprotinin compared with the usual course of inflammation, TB percent of the first type (the largest degree of degranulation) was the largest in subgroup - 38,1%, which is significantly higher than the content of cells in the animal control group – 29 % ($p < 0.01$). Number of second type TB in these animals tended to gradually increase - from 14.5% in the first sub-group to 20.8 % - in the second (Figure 2).

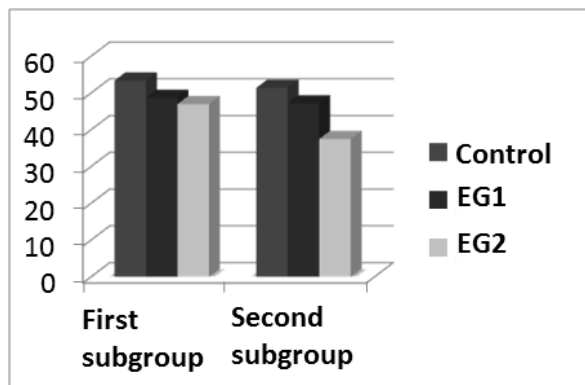
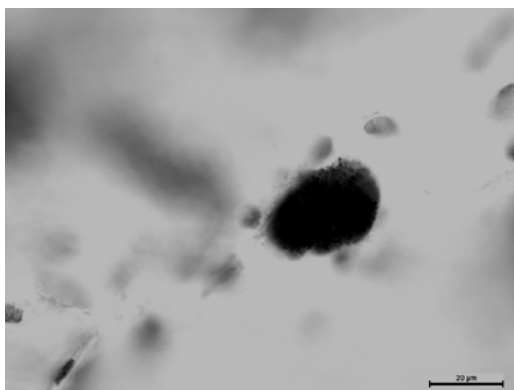


Fig. 2. Tissue basophil with medium content of granules located diffusely (type 2) in rat of the second group (EG2). Toluidine blue.

Fig. 3. The degree of degranulation of tissue basophils in aseptic carragine inflammation and its correction by fluctuating currents and aprotinin.

Fig. 3. The degree of degranulation of tissue basophiles in aseptic carrageenan inflammation and its correction by fluctuating currents and aprotinin.

It should be noted that during the entire period of observation in rats of the second experimental group, which were conducted fluctuophoresis with aprotinin, tissue basophiles with dense and diffuse placements of granules in the cytoplasm were detected (the lowest degranulation rate ranged from 47.0 % in the first subgroup to 37.5 % - in the second). The obtained data indicate that the use of fluctuophoresis with aprotinin inhibits the functional activity of tissue basophils and this is confirmed by statistical confidence in the second experimental group of animals (Fig. 3).

Thus, in the mechanism of anti-inflammatory action of aprotinin, introduced into the site of inflammation with the help of a fluctuating current, the inhibition of functional activity of mast cells, which is the source of initial mediators of inflammation, plays a significant role.

Conclusion

The obtained results of experimental studies morphologically substantiate the ability of fluctuophoresis with aprotinin to produce actively influence on the pathogenesis of acute aseptic inflammatory process. One of its mechanisms is the inhibition of the degranulation process of tissue basophils in the area of the affection. The results of the performed studies showed that after fluctuophoresis with aprotinin, the degree of degranulation of tissue basophiles was by 20.5 % less than after fluctuarization, and by 27 % less than in the control group. Results of the study in an experiment with an anti-inflammatory effect of fluctuophoresis with aprotinin require further thorough clinical study.

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Реферат

ДОСЛІДЖЕННЯ ВПЛИВУ ФЛЮКТУРУЮЧИХ СТРУМІВ ТА АПРОТИНІНУ НА ЗАПАЛЬНУ РЕАКЦІЮ ТКАНИННИХ БАЗОФІЛІВ В УМОВАХ ЕКСПЕРИМЕНТУ

Патерега Н.І., Огоновський Р.З., Мокрик О.Я.

Ключові слова: флюктуоризація, флюктуофорез, апротинін, запальний процес, тканинні базофіли

Оскільки флюктуруючі струми на початкових стадіях запалення здатні обмежувати та пригнічувати запальні процеси, то підсилити їх лікувальний ефект можна було б шляхом флюктуофорезу лікарських препаратів, що володіють протизапальною дією, зокрема, апротиніну. Гальмування розвитку запального процесу пов'язане з впливом на реакцію тканинних базофілів, які виділяють медіатори запалення шляхом дегрануляції. Метою дослідження було вивчення механізму впливу флюктуоризації та флюктуофорезу з апротиніном на процес дегрануляції тканинних базофілів при експериментальному процесі асептичного запалення. Тваринам однієї дослідної групи (ДГ1) проводили флюктуоризацію приладом низькочастотної електротерапії “Радиус – 01” (Беларусь), а другій (ДГ2) - флюктуофорез з препаратом на основі апротиніну. Ступінь дегрануляції визначали шляхом мікроскопічного підрахунку чотирьох типів тканинних базофілів у плівкових препаратах. Результатами дослідження встановлено, що у тварин, яким проводили флюктуофорез з апротиніном (ДГ2), було виявлено тканинні базофіли зі щільними та дифузними розташуваннями гранул у цитоплазмі (найнижчий ступінь дегрануляції - від 47,0 % до 37,5 %, тобто на 20,5 % менший, ніж після флюктуоризації і на 27 %, ніж у контрольній групі). Отримані дані свідчать про виражений протизапальний ефект флюктуофорезу з апротиніном за рахунок пригнічення функціональної активності тканинних базофілів.

Реферат

ИССЛЕДОВАНИЕ ВЛИЯНИЯ ФЛЮКТУРИРУЮЩЕГО ТОКА И АПРОТИНИНА НА ВОСПАЛИТЕЛЬНУЮ РЕАКЦИЮ ТУЧНЫХ КЛЕТОК В УСЛОВИЯХ ЭКСПЕРИМЕНТА

Патерега Н.И., Огоновский Р.З., Мокрик О.Я.

Ключевые слова: флюктуоризация, флюктуофорез, апротинин, воспалительный процесс, тучные клетки.

Так как флюктурирующие токи на начальных стадиях воспаления способны ограничивать и угнетать воспалительные процессы, усилить их лечебный эффект можно было бы путем флюктуофореза лечебных препаратов, владеющих противовоспалительным действием, в частности, апротинина. Торможение развития воспалительного процесса может быть связано с влиянием на реакцию тучных клеток, которые выделяют медиаторы воспаления (гистамин, серотонин, простагландины и др.) путем дегрануляции. Целью исследования было изучение механизма влияния флюктуоризации и флюктуофореза с апротинином на процесс дегрануляции тучных клеток при экспериментальном процессе асептического воспаления. Крысам одной опытной группы (ОГ1) проводили флюктуоризацию аппаратом низкочастотной электротерапии “Радиус – 01” (Беларусь), а другой (ОГ2) - флюктуофорез с препаратом на основе апротинина. Степень дегрануляции определяли путем микроскопического подсчета четырех типов тучных клеток в пленочных препаратах. Результатами исследования установлено, что у крыс, которым проводили флюктуофорез с апротинином (ОГ2), определялись тучные клетки с плотными и диффузными гранулами в цитоплазме со степенью дегрануляции от 47,0 % до 37,5 %, то есть на 20,5 % меньше, чем после флюктуоризации и на 27 % меньше по сравнению с контрольной группой. Полученные данные свидетельствуют об выраженном противовоспалительном эффекте флюктуофореза с апротинином за счет угнетения функциональной активности тучных клеток.

COMPARATIVE EVALUATION OF MR IMAGES OF HUMAN CORPUS CALLOSUM SAGITTAL PROFILE AND CORRESPONDING ANATOMIC SPECIMENS

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Key words: corpus callosum, MRI, anatomic specimens, commissural funiculi.

The aim of the study was to compare the images of natural anatomic specimen of the human corpus callosum sagittal profile with the ones obtained with MR scan. The study was based on 20 MR tomograms of the head of mentally healthy men aged from 32 to 56 years, as well as the same number of anatomic specimens of the brain comparable in terms of age. After two-week fixation in a 10% formalin solution, the brain was dissected along the longitudinal sagittal fissure into two parts and their medial surfaces were photographed. Morphometric analysis of the corpus callosum sagittal profile was carried out using the software RadiAnt Dicom Viewer and Adobe Photoshop CS6 Extended. Apart from this, whole plates of the corpus callosum (about 2 mm thick) were taken in its sagittal plane and plastified in epoxy resin. They were used to make polished thin sections stained with a 1% solution of methylene blue per a 1% borax solution. It has been found out that the contour outlines of the corpus callosum sagittal profile on photographs of anatomical specimens are more distinct and can show details, which are undetectable by the magnetic resonance imaging technique. It has been proven that corpus callosum can not be regarded as a whole mass of nerve conductors. They are divided into individual portions (commissural funiculi) inside the corpus callosum. In the cross section, they give a segmental character to the sagittal section of the corpus callosum that can serve to better delineating the commissural connections between the contralateral centers of the new cortex.

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MORPHOLOGICAL AND ANTHROPOMETRIC PECULIARITIES OF FEMALE STUDENTS OF HIGH GROWTH WITH THE ACCOUNT OF THEIR EVOLUTION CONSTITUTION

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Key words: female students, trochanter index, morphological index values, anthropometric indicators, low growth, high growth, sexual dimorphism, somatotypes, physical culture.

The article presents the results of a study devoted to the study of the values of a number of anthropometric and morpho-functional indices in students with high growth, with physical education at the university and their relationship with the values of the trochanter index as an indicator of the constitutional type of age-related human evolution. The aim of the study was to determine changes in the morpho-functional state of high-growth students, taking into account the revealed values of the types of the evolutionary constitution and a number of their anthropometric and morphological index values. It has been established that the number of girls with mesomorphic and andromorphic sexual somatotypes of the index of sexual dimorphism is 25 (59,52 %) in high-growth students. According to the values of the andromorphy index, all 42 (100 %) high-growth students correspond to the android type of constitution. Violations of the constitutional type of age evolution, according to the results of the determination of the trochanteral index, were found in 36 (85,71%) high-growth students. According to the revealed values of the Pignet index, it is possible to distinguish such types of physique in female students: strong physique in 14 (33,33 %) female students, good physique in 6 (14,29%) female students, average physique in 6 (14,29 %) , weak physique – in 6 (14,29 %), very weak physique – in 4 (9,52 %) female students. According to the values of the sthenicity index, the number of female asthenic students in the group of tall students is 8 (19,05 %), normostenics – 24 (57, 4 %), hypersthenics – 10 (23,81 %) female students.

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MORPHOLOGICAL REMODELING OF MASTICATORY MUSCLES IN REMOTE PERIODS OF TYPE I DIABETES MELLITUS COURSE

Hrad A.O, Zhurakivska O.Ya.

Key words: microcirculatory bed, muscle fibers, chewing muscle.

According to the reported data over the past decade, there has been deterioration in the health status of the population, an increase in the incidence, including the growth of endocrine diseases among which diabetes is ranking the leading position. As you know, skeletal muscle is one of the main tissues that determines carbohydrate and lipid metabolism in the body. At diabetes mellitus often develops diabetic myopathy, which is manifested by acute pain and swelling. According to the literature, large thigh muscles are affected in about 80% of cases, while gastrocnemius muscles suffer in about 20% of cases of patients with diabetes mellitus. Proceeding from the above, the purpose of our study was to establish the morphological features of the restructuring of blood vessels of the hemocirculatory circulation and muscular fibers of the masticatory muscle of rats in experimental type 1 diabetes mellitus. We used 10 mature male rats of the Wistar line, which were evenly divided into 2 groups: control and experimental- animals with simulated streptozotocin diabetes mellitus. Experimental diabetes mellitus in animals of the 2nd group was modeled by single intraperitoneal administration of streptozotocin (dissolved in 0.1 M citrate buffer solution at pH 4.5) at a dose of 6 mg per 100 g of mass. To the control group of animals in an equivalent dose intraperitoneally was injected 0.1 M citrate buffer with pH 4.5. Histological (staining the chewing muscle with hematoxylin and eosin and by Hart) and electron microscopy methods were used. It was found that on the 56th day of the development of streptozotocin diabetes, the level of glucose and HbA1c in the blood of rats increased in 19.85 ± 2.62 mmol / l (control: 4.77 ± 0.51 mmol / L, $p = 0.0079$) and $10.51 \pm 1.07\%$ (control - 1.79 ± 0.47 mmol / l, $p = 0.0079$), which is a sign of the development of uncompensated diabetes mellitus of a severe degree. In this term of experiment, in most muscle fibers appear picnotic nuclei, which is associated with cariorexisism. In muscle fibers there are: karyopicosis, karyolysis, karyorexis; pronounced edema and autolysis of mitochondria; loosening of myofilaments and lysis of individual sarcomeres. The relative volume of mitochondria decreases by 28%, myofibrils by 39.5%, and the sarcoplasmic reticulum by 48%. Occasionally there are areas of partial necrosis of muscle fibers. In these areas, the number of macrophages and fibroblasts increases. The last ones, being in the phase of synthetic activity, produce collagen fibers that replace the muscle tissue.

Such changes in muscle fibers occur against the background of a violation of their blood supply. So in the components of the hemocirculatory circulation, erythrocyte sages, adherence of platelets and erythrocytes to the wall of endotheliocytes are observed. The wall area of microvessels of arterioles, capillaries and venules significantly increases in comparison with the control indices, and the area of the lumen decreases (Table 1). The bloodstream of the chewing muscle during this period is soluble, so the density of capillaries on 1mm² decreases by 2.7 times. The distance between adjacent hemocapillaries and the area they are vascularizing increases, the size of hemocapillary loops increases, and the total volume of the bloodstream decreases. At electron microscopic examination of blood microvessels revealed quite a number of polymorphic changes which are

characterize diabetic microangiopathy. Thus, on the 56th day of streptozotocin diabetes development, diabetic microangiopathy is observed in all parts of the hemocirculatory bed, which is characterized by: narrowing of arterial and metabolic links; vacuolar dystrophy of endotheliocytes, pericytes and myocytes; Thickening of the basement membrane; Hemorheological disorders of blood flow by a decrease in the density of capillaries per 1 mm² of muscle fibers by 2.7 times. Hyperglycemia and diabetic microangiopathy lead to destructive changes in the muscle fibers of the masticatory muscle, and as a consequence, to the development of diabetic myopathy.

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PHAGOCYTAL ACTIVITY OF BLOOD LEUKOCYTES IN DYNAMICS OF EXPERIMENTAL BACTERIAL-IMMUNE PERIODONTITIS

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Key words: bacterial-immune periodontitis, phagocytosis, phagocytic number, phagocytic index.

Mechanisms of the development of the inflammatory process in the periodontal complex include a number of complex processes leading to its spreading throughout the tissues and developing into chronic form, tooth loss and the complications affecting other organs. One of the key segments in the immune system is phagocytosis, which is not only an anti-infectious immunity tool, but also known as a universal homeostasis effector. The aim of the study was to elucidate the pathogenetic role and evaluation of the phagocytic activity of blood granulocytes in the dynamics of the inflammatory response in modeled bacterial-immune periodontitis. The article describes the results demonstrating phagocytic activity of blood granulocytes according to the phagocytic index and the phagocytic number on the 7th, 14th and 30th days of the development of modeled bacterial-immune periodontitis. The results obtained show the characteristic dynamic changes in phagocytic activity in the process of inflammatory focus formation in the periodontal complex. The inadequacy of phagocytic activity manifested in accordance with the period of development of the inflammatory reaction in the periodontal complex, is considered as an important pathogenetic segment in the mechanisms that determine the peculiarities of the development, course and outcome of the inflammatory process.

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ECOLOGICAL AND HYGIENIC ASSESSMENT OF PESTICIDES PERSISTENCY IN SOIL AND RISK PREDICTION OF UNDERGROUND AND SURFACE WATER POLLUTION AFTER TREATING STRAWBERRIES

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Key words: pesticides, soil, ecotox, pesticide persistency index

Soils accumulate various chemicals of man-made origin, including pesticides. The purpose of the study was to carry out the ecological and hygienic assessment of pesticides persistency in soil after its application in the system of strawberries chemical protection and to predict risks of underground and surface water pollution caused by the pesticides. Chromatographic techniques were applied to detect dynamic changes in residual quantity of active agents. Prediction of underground and surface waters pollution and pesticides persistency were calculated. The results have demonstrated that imidacloprid is the most resistant compound in the soil, tefluthrin is moderately hazardous, and other studied substances are classified as of low risk. All the studied active substances are low-toxic in terms of ecotoxicity. In the real-life environment, the pesticides used to protect strawberries in

the agro-industrial complexes and private farms in accordance with the regulations, do not pose a threat to terrestrial ecosystems and biocenoses.

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MORPHOLOGICAL STUDY OF CERVICAL REGION OF TOOTH UNDER HYPERESTHESIA

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Key words: morphological studies, hyperesthesia, teeth.

The article is devoted to the investigation of the process of hyperesthesia involving structural elements of hard dental tissues. The study was carried out on 12 permanent teeth extracted for orthodontic reasons: 3 intact teeth with healthy periodontium; 9 teeth taken from patients who had clinical signs of hyperesthesia (3 upper canines and 6 upper premolars). Morphological studies have shown that the structure of intact teeth in the cervical region is prone to demineralization due to the presence of a thin layer of enamel pierced through with a multitude of non-mineralized lamellae. With hyperesthesia in this area, dental cement breaks down and terminal areas of nerve fibres become exposed. The study has shown a large number of lacunae, which have numerous branches through the thickness of the dentin and anastomose with the dentinal tubules.

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SIMULATION OF AQUEOUS MEDIUM INFLUENCE UPON MECHANISM OF INTERACTION BETWEEN ANTIOXIDANTS MOLECULES AND OXYGEN FREE RADICALS

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Key words: antioxidant, hydroxyl radical, superoxide- anion-radical, glutathione, melatonin.

The lack of systematic research, especially at the molecular level, clarifying the antiradical activity of various antioxidants in their interaction with free radicals in biological systems, not only leads to controversial opinions as to the interpretation of experimentally obtained patterns, but also impedes the development of general ideas of the mechanism of interaction between antioxidants and free radicals, and, in this way hinders the focused approach to the management of these processes that are of great clinical importance. This explains the necessity to study antiradical activity of various antioxidants. Having based on the analysis of the results obtained by quantum chemical simulation of interaction between antioxidants molecules and oxygen radicals, it has been found out that this activity can be described in terms of the acid-base mechanism, where antioxidant acts as a base towards the hydroxyl radical, and as an acid towards superoxide- anion- radical.

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BEHAVIORAL AND HISTOSTRUCTURAL CHARACTERISTICS OF LACTOGENESIS IN RATS AGAINST LABOR STIMULATION WITH OXYTOCIN

Makarenko O.N.

Key words: mammary gland, lactogenesis, oxytocin, labor stimulation, experiment

The experimental study of changes in lactogenesis at labor stimulation with oxytocin was presented in this article. Oxytocin (0,1 ml / 100 g body weight, once a day) was injected to pregnant rats 72, 48, and 24 hours before the delivery. On the third day of the lactation period, abdominal mammary glands were taken for histological study. Additionally, the level of maternal aggression was assessed. According to the results of the study, we can conclude that the 3-fold introduction of oxytocin before the labor effects on the histophysiology of lactogenesis. The morphological changes in the alveolar glands, the lower level of synthetic and secretory activity of the milk-secreting cells of the experimental group compared to the control (0,85% NaCl solution in a dose of

0,1 ml / 100 g of body weight) were revealed. In the group kept on protein-rich diet (+20% of milk protein to standard diet) insufficient lactogenesis was observed as well, and in some cases, atrophic changes in the glandular tissue were registered. The higher level of maternal aggression and the number of episodes of acute aggressive reaction ($P<0.05$) in the experimental groups of the lactating rats were detected. On the basis of histological studies, we can conclude that labor stimulation with oxytocin produces suppressive effect on lactogenesis.

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ASSESSMENT OF OXIDATIVE STRESS AND ANTIOXIDANT SYSTEM PARAMETERS IN BLOOD SERUM OF RATS WITH ACUTE ALCOHOLIC HEPATITIS AND UNDER ITS THERAPUTIC CORRECTION.

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Key words: acute alcoholic hepatitis, rats, oxidative stress, antioxidant system, Corvitin, Glutargin.

It is known that one of the leading factors in the development of liver pathology in acute alcoholic hepatitis are free radical processes that manifest themselves as oxidative stress. The purpose of the work is to study the role of oxidative stress, in particular lipid peroxidation processes in the mechanism of the development of experimental acute alcoholic hepatitis, as well as to investigate the state of the antioxidant system affected with the pathology and during the correction of Corvitin and Glutargin. 66 white mature male rats weighing 120-130 g were involved into the experiment. The animals were divided into five groups: 1st – control; 2nd – animals with acute alcoholic hepatitis modeled by intragastric administration of 40% ethanol at 20 ml / kg body wt for 7 days. 3rd group was made up of the animals with acute alcoholic hepatitis who received Corvitin intraperitoneally at 100 mg / kg body weight ; 4 animals with acute alcoholic hepatitis who received glutargin intraperitoneally at 40 mg / kg body weight; 5th - animals with acute alcoholic hepatitis received Corvitin intraperitoneally at 100 mg / kg and Glutargin at 40 mg / kg of body wt. On the basis of the research, it has been established that acute alcoholic hepatitis is accompanied by activation of lipid peroxidation processes, as evidenced by a significant increase in TBC-active products, as well as a significant weakening of the antioxidant system, which is manifested by a decrease in superoxide dismutase levels in rat serum. It has been proved that the treatment of acute alcoholic hepatitis with the medication having antioxidant properties significantly reduces the activity of oxidative stress and promotes an increase in the antioxidant system. It has been established that Corvitin used as a mono- or complex therapy with Glutargin shows a better corrective effect on the severity of oxidative stress and the functional state of the antioxidant system in comparison with Glutargin monotherapy.

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COMPARATIVE CHARACTERISTICS OF COPPER NANOPARTICLE – CEFTRIAXONE CONJUGATE AND NANODISPERSED SILICA – POLYHEXAMETHYLENE GUANIDINE HYDROCHLORIDE COMPOSITE

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Key words: conjugated copper nanoparticles with ceftriaxone, composite of nanodisperse silica with polyhexamethylene guanidine hydrochloride, minimal inhibitory concentrations.

This paper describes antimicrobial action of the water dispersion of zero valence copper nanoparticle – ceftriaxone conjugate and nanodispersed silica – polyhexamethylene guanidine hydrochloride composite. The substances studied have been observed to suppress the growth of standart test strains of microorgan-isms Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella typhimurium, Salmonella enterica, Klebsiella pneumoniae, Candida albicans. The results obtained point out the appropri-ateness of the future study of the nanoparticles on order to use them as active antimicrobial agents for ther-apy of infectious and inflammatory processes of different etiology.

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HYGIENIC ASSESSMENT OF OCCUPATIONAL RISK WHEN APPLYING COMBINED FUNGICIDES BASED ON DIFENOCONAZOLE AND NEW ACTIVE SUBSTANCE OF CYFLUFENAMID

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Key words: combined fungicides, professional risk, hygienic standard.

Nowadays the application of pesticides in agriculture is an indispensable condition of obtaining high yields, but impairment of standards and regulations can threaten to the health of population and, first and foremost, to agricultural workers. The aim of this paper is to carry out a hygienic assessment of the occupational conditions of the farm personnel dealing with Dinali and Cydeli Top antifungal substances. Field studies were conducted in the Mykolayiv and Cherkasy regions. Working conditions of workers were assessed by the finding of the detection of difenoconazole and cyflufenamide in the air of the working area, swabs taken from the open skin and skin areas under working clothes, stripes on working clothes. We presented the grounds of the values of the tentatively safe exposure level of cyflufenamide in the air of the working areas at the level of 1,0 mg/m³. After the spraying of agricultural crops with the fungicides studied was completed, we did not register their active substances entering into the air in the working zone. It has been found out that when applying the tested combined formulations, the potential risk of harmful impact on the organisms of refuelers and tractor drivers under the complex intake through the respiratory tract and skin, including the combined intake, did not exceed 1 c.u., i.e., it is permissible and the working conditions of the workers are considered to be satisfactory.

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MICROSTRUCTURE OF AORTA'S WALL IN NORMAL CINDITION AND IN EARLY STAGES OF STREPTOZOTOCYN-INDUCED DIABETES MELLITUS

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Key words: aorta, microstructure, microvascular bed, streptozotocyn, diabetes, white rats.

Diabetes mellitus is has been considered as a socio-economic and medical challenge resulting in vascu-lar complications that, in turn, leads to disabilities in young age and development of lethal complications in older age patients. The major focus in the genesis of diabetes complications is fixed on morphofunctional changes in vascular walls. Diabetic angiopathy can be divided into microangiopathies, at which capillaries, arterioles and venules are affected, and macroangiopathies, affecting medium and large caliber vessels. Therefore, the aim of the research was to study the morphology of the aortic wall in normal condition and the condition of blood vessels of the aortic microvasculature at the early stage of experimental diabetes. The histological investigation was based on parts of the ascending aorta, arch and descending aorta taken from 26 white male rats. The samples were stained with Heidenhain's azan, Weigert's resorcin fuchsin with adding Van-Gizon's picrofuchsin, and the nuclei were stained with Weigert's iron hematoxilin. We have identified morphological qualities of the aortic walls in the healthy rats, and in the rats in 2 and 4 weeks after the modeling of streptozotocyn-induced diabetes. In four week of the experiment, the profound changes in the aortic wall and vessels of its microvascular bed were found out, which is evidence for the development of macro- and microangiopathy. It has been convincingly demonstrated that the severity of destructive changes in the vascular walls depends on the duration of the experiment.

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EFFECT OF INTERMITTENT NORMOBARIC HYPOXIA ON MORPHOFUNCTIONAL STATE OF PANCREAS IN SPONTANEOUSLY HYPERTENSIVE RATS

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Key words: intermittent normobaric hypoxia, pancreas.

The study of effect of intermittent normobaric hypoxia on the morphofunctional state of the pancreas in spontaneously hypertensive rats (SHR) was described in this research paper. The hypoxic gas mixture (12% oxygen in nitrogen) was given daily to the experimental animals (for 28 days) in a intermittent mode: 15 minutes deoxygenation / 15 minutes reoxygenation for 2 hours. It was revealed that the intermittent normobaric hypoxia of the sanogenic level had different effects on the activity of the exocrine and endocrine parts of the SHR pancreas. Thus, according to the majority of morphometric indices, it can be assumed that exposure to the hypoxic mixture reduces the functional activity of the exocrine part of the gland. This is evidenced by a decrease in the size of the acinus and the height of their epithelium, as well as a decrease in the area of exocrine cells, their nuclei and cytoplasm in the animals. The test rats were identified to have a decrease in the width of interlobular and interacinus layers of connective tissue. It was found out that the influence of intermittent normobaric hypoxia increases the signs of functional activity of the endocrine gland. This is indicated by an increase in the number and size of the Langerhans islets, as well as by an increase in the number of endocrinocytes housed in them.

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CLINICAL AND PREVENTIVE MEDICINE

SEX AND AGE FEATURES OF ENDOSCOPY-POSITIVE GASTROESOPHAGEAL REFLUX DISEASE

Bychkov M. A., Savytsky Ya. M., Shvydky Ya. B, Yakhnitska M. M.

Key words: gastroesophageal reflux disease, prevalence, esophagitis, age, sex.

Gastroesophageal reflux disease (GERD) is one of the most common chronic gastroenterological diseases, which is demonstrating a clear tendency to the constant increase in morbidity not only in developed countries of Europe and the USA, but also in Asian countries. GERD is characterized by a high rate of re-lapses, a significant negative impact on the quality of life of patients. Despite the

obvious progress achieved in the study of this pathology, diagnosis and treatment of GERD remains an urgent issue for the health care professionals in Ukraine. Objectives: to study the sex- and age-related characteristics of the endoscopy-positive form of GERD in patients subjected to endoscopic examination of the upper gastrointestinal tract at the endoscopic department of the Lviv Regional Clinical Diagnostic Center for the period 2015-2016. Materials and methods. We performed retrospective analysis of the journal of endoscopic research registration for 2015-2016. The endoscopic investigations were carried out by Olympus and Pentax fiber gastroscopes. Changes in the esophageal mucosa were assessed according to the Los Angeles Classification (1997). We used WHO (2016) classification of age groups. Computer processing was carried out using Microsoft Excel. Research results. During the period from 2015 to 2016, 3479 endoscopic investigation procedures were performed, and 502 of patient (14, 4%) were diagnosed to have erosive esophagitis. In 2015, there were 196 patients (52 women and 144 men) with erosive changes in the esophagus: total number of patients was 103 individuals, 45-60 year old group included 60 patients, 61-75 year old group included 27 patients, and 76-90 year old group involved 6 patients. In 2016, 306 patients (85 women and 221 men) were diagnosed to have endoscopy-positive GERD: 18-44 year group was made up of 166 patients, 45-60 year old group included 84 patients, 61-75 year old group included 50 patients, and 6 patients were 76-90 years old. Conclusions. The prevalence of endoscopy-positive GERD in the Lviv region in 2015-2016 made up 13.2%. More often, GERD is diagnosed in combination with other diseases of the gastrointestinal tract (86.3% of the patients). Among the patients with endoscopy-positive GERD men dominated (72.7%). In the young and middle age, endoscopic signs of GERD are more common (82.4% of patients with GERD).

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DAPAGLIFLOZIN UTILITY IN PATIENTS WITH DIABETES MELLITUS TYPE 2 AND ESSENTIAL HYPERTENSIVE DISEASE

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Introduction: Diabetes Mellitus Type 2 (DM2) and Essential Hypertensive Disease (EHD) are interrelated diseases that increase the risk of atherosclerotic cardiovascular disease, which requires effective treatment regimens. Aim: The purpose of this work was to study Dapagliflozin [a Sodium-glucose linked transporter 2 (SGLT-2) inhibitor] utility on the clinical course of disease in patients with Diabetes Mellitus Type 2 (DM2) and Essential Hypertensive Disease (EHD). Materials and Methods: The study involved 42 patients with DM2 and EHD degree 1-2, stage II; 19 females and 23 males; average age being (58.6 ± 5.2) years. All patients were divided into two groups: 22 patients receiving Metformin at a dose of 1500 mg/day, Diabeton MR 60 mg/day and Ramipril 5-10 mg/day (Group I or G1) and 20 patients receiving Metformin at a dose of 1500 mg/day, Diabeton MR 60 mg/day, Ramipril 5-10 mg/day and Dapagliflozin 10 mg/day (Group II or G2). Patients from both groups were treated for three months. Groups were randomized by age, gender and body mass index (BMI). All patients had general clinical tests, glycosylated hemoglobin (HbA_{1C}), microalbuminuria test, glomerular filtration rate (GFR), total cholesterol (TC), triglyceride (TG), low density lipoprotein (LDL), high density lipoprotein (HDL), blood pressure monitoring and BMI which was determined according to the Kettle formula. Results: After treatment, in group II patients

HbA₁C was reduced to (7.47±0.39)% as against (9.02±0.43)% before treatment (p <0.05); in group I patients, HbA₁C was reduced to (8.23±0.64)% as against (8.85±0.41)% before treatment (p <0.05). Microalbuminuria (MAU) was reduced in 75.0% of patients in group II to (16.40±0.85)mg/l as against (28.13±1.90)mg/l before treatment (p <0.05) and increased in 18.18% of patients in group I when compared to baseline (p > 0.05). GFR increased in 25.0% of patients in group II (p <0.05) and decreased in 9.09% of patients in group I (p <0.05). A significant decrease in systolic blood pressure was observed in patients of group II, which was not observed in patients of group I. The blood levels of total cholesterol and triglyceride decreased in patients of group II (p <0.05), and remained unchanged in patients of group I (p > 0.05). Conclusion: Application of Dapagliflozin in the complex treatment of patients with diabetes mellitus type 2 and essential hypertensive disease increases the utility of treatment.

Key words: dapagliflozin, utility, diabetes mellitus type 2, essential hypertensive disease, microalbuminuria

Introduction:

Diabetes mellitus as a disease is one of the major medico-social problems and is a priority for national health systems around the world [5].

There are now over 300 million diabetes patients in the world. It is projected that in 2035 this figure will reach almost 600 million [10]. In Ukraine, there are 1,380,000 patients with diabetes mellitus. It was on the basis of these data and the rate of spread of diabetes, that the UN called the disease a non-infectious pandemic of the 21st century [3,4].

Diabetes Mellitus Type 2 (DM2) and Essential Hypertensive Disease (EHD) are interrelated diseases that increase the risk of atherosclerotic cardiovascular disease, which requires effective treatment regimens. Arterial hypertension (AH) is a major risk factor for developing cardiovascular complications in patients with diabetes mellitus type 2, increasing the incidence of coronary heart disease (CHD), stroke, retinopathy and nephrosclerosis. In the presence of diabetes mellitus type 2, cardiovascular risk factors such as central obesity, dyslipidemia, microalbuminuria, abnormalities in blood coagulation, signs of systemic inflammation appear [7].

The purpose of treatment for patients with diabetes mellitus type 2 and essential hypertensive disease is the maximum reduction in the risk of developing cardiovascular complications [6]. According to the current recommendations, all known risk factors e.g. high blood pressure and other associated diseases such as heart failure, chronic kidney disease (CKD), coronary heart disease (CHD) etc., are also subjected to treatment.

In present studies, the effectiveness of anti-diabetic drugs of the new class of sodium-glucose linked transporter 2 (SGLT-2) inhibitors to inhibit the activity of SGLT-2 thereby reducing and eliminating glucose reabsorption in the kidneys, helped to reduce body weight and by reducing the amount of circulating blood, may contribute to the reduction of arterial hypertension [13].

Aim of Research:

The purpose of this work was to study Dapagliflozin [a Sodium-glucose linked transporter 2 (SGLT-2) inhibitor] utility on the clinical course of disease in patients with Diabetes Mellitus Type 2 (DM2) and Essential Hypertensive Disease (EHD) [1,9].

Materials and Methods of Research:

The study involved 42 patients with DM2 and EHD degree 1-2, stage II; 19 females and 23 males; average age being (58.6 ± 5.2) years. The diagnosis of diabetes mellitus type 2 was performed according to the order of the Ministry of Health of Ukraine No. 1118 dated December

21, 2012 and the clinical guidelines on "Diabetes Mellitus Type 2" (2012). The diagnosis of EHD was established on the basis of the Order of the Ministry of Health of Ukraine No. 384 dated May 24, 2012 and the clinical guidelines on "Arterial Hypertension" (2012). And moreover, diagnoses were established according to the consultation findings of cardiologist and endocrinologist.

All patients were divided into two groups: 22 patients receiving Metformin at a dose of 1500 mg/day, Diabeton MR 60 mg/day and Ramipril 5-10 mg/day (Group I or G1) and 20 patients receiving Metformin at a dose of 1500 mg/day, Diabeton MR 60 mg/day, Ramipril 5-10 mg/day and Dapagliflozin 10 mg/day (Group II or G2). Patients from both groups were treated for three months. Groups were randomized by age, gender and body mass index (BMI). The study did not include patients with GFR <60 ml/ min/1.73 m², ketoacidosis or urinary tract infection in the history. All patients had general clinical tests, glycosylated hemoglobin (HbA_{1C}), microalbuminuria test, glomerular filtration rate (GFR), total cholesterol (TC), triglyceride (TG), low density lipoprotein (LDL), high density lipoprotein (HDL), blood pressure monitoring and BMI which was determined according to the Kettle formula.

The statistical processing of the results was carried out on IBM PC Pentium-200 using the standard program package "Statistica 7 for Windows" ("Stat Soft", USA).

Results and discussion:

After a 3-month course of treatment with SGLT-2 inhibitors in group II patients, 16 patients (80.0%) were without changes and in 4 patients (20.0%) no deterioration was noted, no ketoacidosis was detected. In all Group II patients, edema syndrome was shown to reduce, polydipsia was not observed in 85.0% of patients, polyphagia was nil in 90.0% of patients and itchy skin was also not seen in 95.0% of patients. In Group I patients, the effectiveness of treatment was lower: edema syndrome decreased in 22.73% of cases, polydipsia was not noted in 63.64%, polyphagia - in 72.73%, itchy skin - in 77.27%.

Given that diabetes mellitus type 2 is often accompanied by obesity, monitoring of BMI was important under the period of treatment [2,11]. It was found that in patients of group II, the BMI decreased by 7.69% (33.8 ± 1.25) kg/m² to (31.2 ± 1.19) kg/m² ($p < 0.05$). In the comparison group I, BMI was unchanged and remained (32.9 ± 1.22) kg/m² compared to (33.4 ± 1.27) kg/m² before treatment ($p > 0.05$). To a large extent, this is apparently due to the diuretic activity of SGLT-2 inhibitors, but it was proved by the results of X-ray densitometry that under the influence of SGLT-2 inhibitors there was a decrease in both subcutaneous and visceral adipose tissue [8].

Dynamics of EHD indices in the examined patients were more pronounced under the influence of integrated treatment with SGLT-2 inhibitors when compared with baseline therapy. In particular, systolic blood pressure (SBP) decreased by 10.98% ($p < 0.05$) from (151.90 ± 7.04) mmHg to (135.22 ± 4.13) mmHg, diastolic blood pressure (DBP) decreased by 7.94% ($p < 0.05$) from (94.85 ± 4.60) mmHg to (87.31 ± 2.92) mmHg. These changes were not observed in the comparison group I (Table 1). These results can be explained by a decrease in the volume of circulating blood due to the diuretic effect of SGLT-2 inhibitors [9].

Table 1:

Dynamics of clinical and laboratory parameters of patients with diabetes mellitus type 2 and essential hypertensive disease under complex treatment with Dapagliflozin, $M \pm m$

Parameters	Healthy control group, n=20	Group I patients, n=22		Group II patients, n=20	
		Before treatment	After treatment	Before treatment	After treatment
Initial blood glucose level, mmol/L	4.26 ± 0.18	9.13 ± 0.49*	7.55 ± 0.34*•	9.25 ± 0.50*	6.73 ± 0.30*•°
HbA ₁ C (%)	4.62 ± 0.25	8.85 ± 0.41*	8.23 ± 0.35*	9.02 ± 0.43*	7.47 ± 0.39*•°
SBP (mmHg)	122.40±4.33	152.41±6.53*	149.83±5.16*	151.90±7.04*	135.22±4.13*•°
DBP (mmHg)	77.52±4.60	93.55±3.72	90.65±4.23*	94.85±4.60	87.31±2.92•°
MAU (mg/L)	7.93±0.21	27.05±1.81*	24.63±1.08*•	28.13±1.90*	16.40±0.85*•°
Proteinuria, g/L	-	0.53±0.02*	0.34±0.01*•	0.62±0.03*	0.15±0.01*•°
GFR (ml/min)	115.72±3.86	76.24±3.33*	73.28±3.65*	75.43±3.71*	82.41±4.50*•°
Urea (mmol/L)	5.53±0.37	8.27±0.55*	7.15±0.40*•	8.83±0.62*	6.46±0.31*•
Creatinine (mmol/L)	80.4±5.6	128.3±6.2*	119.7±5.8*	130.3±7.5*	105.2±4.3*•°
Total cholesterol (mmol/L)	4.42±0.22	6.75±0.34*	6.80±0.39*	6.91±0.42*	5.74±0.28*•°
HDL (mmol/L)	1.65±0.13	1.19±0.06*	1.22±0.05*	1.15±0.05*	1.32±0.04*•°
LDL (mmol/L)	2.13±0.15	3.48±0.23*	3.50±0.26*	3.52±0.28*	2.98±0.25*
Triglyceride (mmol/L)	1.38±0.10	2.35±0.18*	2.28±0.24*	2.48±0.20*	1.95±0.17*•°

Notes: n – number of persons in a group; * – probability of difference (correlation coefficient) from the healthy group ($p < 0.05$);

• – probability of difference (correlation coefficient) before and after treatment ($p < 0.05$);

° – probability of difference (correlation coefficient) in groups I and II ($p < 0.05$)

Under the course of treatment, there were positive dynamics in carbohydrate metabolism rates, which were more pronounced in group II patients who received additionally SGLT-2 inhibitors when compared with group I patients. In particular, in group II patients glycemia decreased by 27.24% ($p < 0.05$) and the HbA₁C index was decreased by 17.18% ($p < 0.05$). In group I patients, glycemia decreased by 17.30% ($p < 0.05$) and the HbA₁C index was decreased by 7.0% ($p > 0.05$) respectively.

The evaluation of lipid profiles revealed that the 3-month complex treatment with SGLT-2 inhibitors was accompanied by a decrease in the blood levels of total cholesterol in the blood by 16.93% ($p < 0.05$), TG by 21.37% ($p < 0.05$), an increase in HDL by 14.78% ($p < 0.05$) and without an increase of LDL ($p > 0.05$); whereas in group I patients the lipid profile values did not significantly change ($p > 0.05$) (Table 1).

One of the important criteria for the treatment of diabetes mellitus type 2 and essential hypertensive disease is the dynamics of indicators of the functional state of the kidneys [12]. It was

found that the additional use of SGLT-2 inhibitors was accompanied by a decrease in microalbuminuria (MAU) in 75.0% of group II patients (16.40 ± 0.85)mg/l as compared to (28.13 ± 1.90)mg/l before treatment ($p < 0.05$) and increased in 18.18% of group I patients (33.2 ± 2.58)mg/l as compared to baseline ($p > 0.05$). GFR increased in 25.0% of group II patients ($p < 0.05$) and decreased in 9.09% of group I patients ($p > 0.05$). In group II patients, GFR increased by 9.28% ($p < 0.05$), which was accompanied by a significant decrease in the level of creatinine in the blood by 19.19% ($p < 0.05$). This was not noted in group I patients.

Conclusion

Application of Dapagliflozin in the complex treatment of patients with diabetes mellitus type 2 and essential hypertensive disease increases the utility of treatment through positive dynamics on carbohydrate metabolism, systolic blood pressure, the reduction of body mass index and improvement of the functional state of the kidneys.

Prospects for further research

Prospects for further research are to study the effects of SGLT-2 inhibitors on the common pathogenetic links between diabetes mellitus type 2 and essential hypertensive disease.

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Реферат

КОРИСНІСТЬ ДАПАГЛІФЛОЗИНУ ДЛЯ ПАЦІЄНТІВ З ЦУКРОВИМ ДІАБЕТОМ 2 ТИПУ ТА ГІПЕРТОНІЧНОЮ ХВОРОБОЮ

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Ключові слова: дапагліфлозин, корисність, цукровий діабет 2 типу, гіпертонічна хвороба, мікроальбумінурія

Цукровий діабет 2 типу і гіпертонічна хвороба – це взаємопов'язані захворювання, які збільшують ризик атеросклеротичних серцево-судинних захворювань, що вимагає ефективних схем лікування.

Метою даної роботи було вивчення корисності дапагліфлозину [інгібітора сполучного транспортера 2 із глюкозою натрію (SGLT-2)] на клінічний перебіг захворювання у пацієнтів з цукровим діабетом 2 типу та гіпертонічною хворобою. Матеріали та методи: У дослідженні взяли участь 42 пацієнти з ступенем цукрового діабету 2 та гіпертонічної хвороби ступеня 1-2, стадія II; 19 жінок та 23 чоловіків; середній вік ($58,6 \pm 5,2$) років. Всі пацієнти були поділені на дві групи: 22 пацієнти отримували метформін у дозі 1500 мг / добу, Diabeton MR 60 мг / добу та раміприл 5-10 мг / добу (група I або Г1) та 20 пацієнтів, які отримували метформін у дозі від 1500 мг / добу, Diabeton MR 60 мг / добу, раміприл 5-10 мг / добу і дапагліфлозин 10 мг / добу (група II або Г2). Пацієнтів з обох груп лікували протягом трьох місяців. Групи були рандомізовані за віком, статтю та індексом маси тіла. У всіх пацієнтів були загальні клінічні випробування, глікозильований гемоглобін (HbA_{1c}), тест мікроальбумінурії, швидкість клубочкової фільтрації, загальний холестерин, тригліцерид, ліпопротеїни низької щільності, ліпопротеїни високої щільності, кров'яний тиск моніторинг та індекс маси тіла, який був визначений відповідно до формули Кетле. Результати. Після лікування у пацієнтів групи II HbA_{1c} до рівня лікування ($p < 0,05$) зменшився до ($7,47 \pm 0,39$)% проти ($9,02 \pm 0,43$)%. У пацієнтів групи I HbA_{1c} знижувався до ($8,23 \pm 0,64$)% проти ($8,85 \pm 0,41$)% до лікування ($p < 0,05$). Мікроальбумінурія зменшилась до 75,0% пацієнтів у групі II до ($16,40 \pm 0,85$) мг/л проти ($28,13 \pm 1,90$) мг/л перед лікуванням ($p < 0,05$) і збільшилася на 18,18% пацієнтів у групі I в порівнянні з вихідним ($p > 0,05$). Швидкість клубочкової фільтрації збільшилася на 25,0% пацієнтів у групі II ($p < 0,05$) і знизився на 9,09% пацієнтів у групі I ($p < 0,05$). Значне зниження систолічного артеріального тиску спостерігалось у пацієнтів II групи, що не спостерігалось у пацієнтів групи I. У пацієнтів II групи ($p < 0,05$) знижувався рівень загального холестерину та тригліцериду, а у пацієнтів групи I залишався незмінним ($p > 0,05$).

Висновок. Застосування дапагліфлозину в комплексному лікуванні хворих на цукровий діабет 2 типу та гіпертонічної хвороби підвищує корисність лікування.

Реферат

ПОЛЕЗНОСТЬ ДАПАГЛІФЛОЗИНА ДЛЯ ПАЦИЕНТОВ С САХАРНЫМ ДИАБЕТОМ 2 ТИПА И ГИПЕРТОНИЧЕСКОЙ БОЛЕЗНЬЮ

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Ключевые слова: дапагліфлозин, полезность, сахарный диабет 2 типа, гипертоническая болезнь, микроальбуминурия

Сахарный диабет 2 типа и гипертоническая болезнь (ГБ) - это взаимосвязанные заболевания, которые увеличивают риск атеросклеротических сердечно-сосудистых заболеваний, требуют эффективных схем лечения. Целью данной работы было изучение полезности дапагліфлозина (ингибитора связующего транспортера 2 с глюкозой натрия (SGLT-2)) на клиническое течение заболевания у пациентов с сахарным диабетом 2 типа и гипертонической болезнью. Материалы и методы: В исследовании приняли участие 42 пациента со степенью сахарного диабета 2 и гипертонической болезнью степени 1-2, стадия II; 19 женщин и 23 мужчин; средний возраст ($58,6 \pm 5,2$) лет. Все пациенты были разделены на две группы: 22 пациента получали метформин в дозе 1500 мг / сут, Diabeton MR 60 мг /

сутки и рамиприл 5-10 мг / сут (группа I или Г1) и 20 пациентов, получавших метформин в дозе 1500 мг / сут, Diabeton MR 60 мг / сут, рамиприл 5-10 мг / сут и дапаглифлозин 10 мг / сут (группа II или Г2). Пациентов из обеих групп лечили в течение трех месяцев. Группы были рандомизированы по возрасту, полу и индексом массы тела (ИМТ). У всех пациентов были общие клинические испытания, гликозилированный гемоглобин (HbA1C), тест микроальбуминурии, скорость клубочковой фильтрации, общий холестерин, триглицериды, липопротеины низкой плотности, липопротеины высокой плотности, кровяное давление мониторинг и ИМТ, который был определен в соответствии с формулой Кетле. Результаты. После лечения у пациентов группы II HbA1C до уровня лечения ($p < 0,05$) уменьшился до $(7,47 \pm 0,39)\%$ против $(9,02 \pm 0,43)\%$. У пациентов группы I HbA1C снижался до $(8,23 \pm 0,64)\%$ против $(8,85 \pm 0,41)\%$ до лечения ($p < 0,05$). Микроальбуминурия уменьшилась до 75,0% пациентов в группе II до $(16,40 \pm 0,85)$ мг / л против $(28,13 \pm 1,90)$ мг / л перед лечением ($p < 0,05$) и увеличилась на 18,18% пациентов в группе I по сравнению с исходным ($p > 0,05$). скорость клубочковой фильтрации увеличилась на 25,0% пациентов в группе II ($p < 0,05$) и снизился на 9,09% пациентов в группе I ($p < 0,05$). Значительное снижение систолического артериального давления наблюдалось у пациентов II группы, не наблюдалось у пациентов группы I. У пациентов II группы ($p < 0,05$) снижался уровень общего холестерина и триглицеридов, а у пациентов группы I оставался неизменным ($p > 0,05$). Вывод. Применение дапаглифлозина в комплексном лечении больных сахарным диабетом 2 типа и гипертонической болезни повышает полезность лечения.

INFLUENCE OF ANTIHYPERTENSIVE THERAPY ON HUMORAL MARKERS OF SUBCLINICAL TARGET ORGAN DAMAGE IN PATIENTS WITH ARTERIAL HYPERTENSION AND INSULIN RESISTANCE

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Key words: arterial hypertension, target organ damage, humoral markers, microalbuminuria, treatment.

When choosing tactics for the treatment of arterial hypertension, special attention is paid not only to as-sessing the state of central hemodynamics, but also to revealing early signs of the target organ damage of the heart and kidneys. The aim of the study was to evaluate the effect of complex antihypertensive therapy with the inclusion of felodipine, a calcium antagonist, irbesartan, an angiotensin II receptors blocker, and atorvastatin, on humoral markers of subclinical target organ damage in patients with hypertension, depend-ing on the blood insulin levels. Materials and methods. 54 patients with hypertension were examined. Daily monitoring of blood pressure, oral glucose tolerance test, glucose level (glucose oxidase method) and en-dogenous insulin, B-type natriuretic peptide, C-reactive protein, tumor necrosis factor- α in blood (immuno assay) and microalbuminuria/proteinuria levels were measured. Results. The patients with hypertension against insulin resistance, with not only spontaneous but also with reactive hyperinsulinemia, are characterized by a low level of blood pressure control, the prevalence of unfavourable daily non-dipper blood pressure profile (56%) that is accompanied by impaired functioning of cardio-renal interrelation with an increase in the blood B-type natriuretic peptide levels and the development of microalbuminuria / proteinuria, activation of immune inflammation. The use of the complex with the inclusion of felodipine, irbesartan, atorvastatin allowed us to achieve an increase in blood pressure control to 61% of the cases, an increase in the frequency of the daily dipper blood pressure profile to 77% of the cases and to reduce the intensity of systemic inflammation by decreasing the levels of proinflammatory cytokine tumour necrosis factor-alpha, C-reactive protein and the B-type natriuretic peptide, as well as to achieve a regression of microalbuminuria / proteinuria levels, especially in the patients with hyperinsulinemia. Conclusions. 1. The level of humoral markers of

subclinical target organ damage increases with an increase in the severity of insulin resistance. Microalbuminuria / proteinuria develop in the patients who have not only spontaneous, but also reactive hyperinsulinemia. 2. The use of felodipine, irbesartan and atorvastatin contributes to the control of blood pressure in 61% of the cases in hypertension with insulin resistance, and also reduces the intensity of systemic inflammation in terms of the cytokine profile (tumour necrosis factor- α) and the blood C-reactive protein levels, contributes to a decrease in B-type natriuretic peptide and microalbuminuria/proteinuria.

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HYGIENIC ASSESSMENT OF IMPACTS PRODUCED BY ENVIRONMENTAL FACTORS ON HEALTH OF POPULATION OF TECHNOGENIC REGION

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Key words: morbidity, public health, environment, technogenic region.

The overwhelming majority of scientists agree that one of the main criteria of the quality of the environ-ment is the level of population health. The aim of the study to find out key environmental anthropogenic pollutants, their sources and ways of entering the environment, as well as the impact produced by these harmful substances on the health of the population; to establish health indicators that are the most influenced by environmental factors. Materials and Methods. The study of morbidity and mortality rate of the population of the Donetsk region was carried out in the period of 1990-2013. Hygienic assessment of the environmental conditions (atmospheric air, drinking water, soil, food) was carried out on the basis of an analysis of the data provided by the Donetsk Regional Sanitary and Epidemiological Station for the period of 1990-2013. Results. A comparative analysis of the dependence of the health indicators of the population health in the environmentally challenged region on the level of anthropogenic pollution of the environment showed that the

primary morbidity and mortality of the inhabitants of the first group of cities (with the maximum level of environmental pollution) is significantly higher ($p < 0.05$), while the birth rate is lower compared with the cities of the second group (with a minimum level of environmental pollution). The comparative analysis made it possible to precalculate that the negative tendencies in the health of Donetsk region residents are mainly due to the excessively high level of technogenic pollution of the air, soil and drinking water. The results of multiple correlation analysis have shown that the most environmentally impacted indicator of the health of Donetsk region residents is the incidence rate.

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INFLUENCE OF DRINKING WATER ON PREVALENCE OF DISEASES OF BLOOD, BLOOD-PRODUCING ORGANS AND ANAEMIA AMONG CHILDREN OF RURAL TAXA OF DNIPROPETROVSK REGION

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Key words: rural taxa, prevalence of III class diseases, anemia, potable water.

Objectives: to investigate dynamics of prevalence of the diseases of blood, blood-producing organs and anaemia among child in the some rural taxa of Dnepropetrovsk region, and to carry out correlation analysis between some indicators of potable water quality and prevalence of the diseases. The analysis of prevalence rate of the diseases (15 classes according to ICD-X) was conducted in 22 rural districts of the Dnepropetrovsk region, which were divided into 6 types of taxa. Retrospective analysis of the prevalence rate of the diseases was carried out on the basis of official statistical documented records provided by the official state health care settings. Statistical processing and analysis of findings obtained was carried out by the medical statistical methods. Evaluation of the relationship between variables was carried out by calculating Spearman's rank correlation (r) coefficients. Critical level of statistical significance (p) was accepted at the level ($p < 0.05$). Research methodology included sanitary-toxicological, physical, chemical (for detecting indicators of potable water quality from decentralized water supply sources) technique; statistical (mathematical) processing to obtain quantitative indicators, methods of variation statistics. Structure of the disease prevalence among 14 year old children in the different taxa of Dnepropetrovsk region demonstrated the different classes of diseases, and in particular, infectious and parasitic diseases; diseases of digestive organs; genitourinary; musculoskeletal and other classes of disease: diseases of blood and hematopoietic organs; anaemia; tumours; and some nosological forms as congenital anomalies. It has been found out circulatory diseases held the leading position in the prevalence rate in the majority of rural taxa during 2008 – 2013 years. It has been determined, that among the children in the 5 taxa there was the highest positive rate in the growth of prevalence of all diseases (+4.3 %), infectious and parasitic diseases (+17.4%), cancerous diseases (+20.7 %), diseases of blood and hematopoietic organs (+7.1 %), anaemia (+5.9 %), endocrine system (+2.2 %), circulatory system (+42.3 %), digestive system (+1.4 %). The paper demonstrates the correlation between higher salt content of the potable water taken from decentralized sources and content of some heavy metals (Zn, Cu, Mn) and some substances (pH, F, Al, nitrogen ammonia, nitrites, nitrates, oxidability) and the prevalence of diseases among children as well as tumours ($r=0.87$); diseases of blood and hematopoietic organs ($r=0.74-0.95$); anaemia ($r=0.79-0.87$); diseases of genitourinary system ($r=0.79-0.82$); congenital anomalies ($r=0.87$), including circulatory system ($r=0.74-0.95$) in the some taxa of the Dnepropetrovsk region ($p < 0.001$).

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ANXIETY DISORDERS IN ACUTE PERIOD OF STROKE: PREVALENCE AND ASSOCIATED FACTORS

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Key words: stroke, anxiety disorders, prevalence, predictors.

Post-stroke anxiety disorders have a significant negative impact on the processes of functional and cognitive recovery, on the quality of life of patients. Purpose: to study the prevalence of anxiety disorders in the acute period of strokes, as well as the factors associated with anxiety disorders. Material and methods. We examined 173 patients in the acute period of ischemic and hemorrhagic strokes. Anxiety disorders were recorded on the day of the discharge from the hospital according to the anxiety subscale of the Hospital Scale of Anxiety and Depression. Conclusions. The incidence of anxiety disorders in the patients with strokes at the moment of discharge from hospital is 35.3%. Predictors of the development of anxiety disorders are younger age of patients, female sex, and clinical severity of stroke according to the NIHSS scale at the moment of hospitalization. At the moment of hospital discharge, the risk of anxiety disorders has direct reliable associations with the severity of the neurological deficit according to the NIHSS scale, with the degree of post-stroke functional defects according to the modified Rankin scale and with increased daytime sleepiness.

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HIGH-DENSITY LIPOPROTEIN CHOLESTEROL AS PROGNOSTIC FACTOR IN PATIENTS WITH NON-HODGKIN'S LYMPHOMAS AND CHRONIC LYMPHOCYTIC LEUKAEMIA, ITS ASSOCIATION WITH SYSTEMIC INFLAMMATION AND QUALITY OF LIFE

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Key words: non-Hodgkin's lymphomas, chronic lymphocytic leukaemia, high density lipoprotein cholesterol, inflammation, quality of life, prognosis.

Improving the prediction of the course of haematological tumours is very important in clinical settings. The aim of the study was to determine the influence of high-density lipoprotein cholesterol levels on the survival rates of patients with mature B-cell lymphoid neoplasms and to identify related factors. 45 patients with non-Hodgkin's lymphomas (n=36) and chronic lymphocytic leukaemia (n=9) were examined, of which 26 males and 19 females aged 26-80 years (median 60 years). A complete clinical examination before the onset of chemotherapy included the determination of lipids, markers of inflammation in the blood, the general condition and quality of life of patients using the questionnaire EORTC-QLQ-C30. Overall and event-free survival of patients was estimated with Kaplan-Meier method during the observation period of 35 months. Reduced high-density lipoprotein cholesterol levels were detected in 18 patients (40.0%). The cumulative proportions of overall and event-free survival in the case of low high-density lipoprotein cholesterol levels were significantly lower than in patients with normal levels (p=0.033 and p=0.008, respectively). Levels of this lipid were inversely correlated with systemic inflammation markers and directly correlated with patients' quality of life estimation. The low high-density lipoprotein cholesterol level in patients with mature B-cell lymphoid neoplasms is an unfavourable predictive biomarker associated with systemic inflammation and reduced quality of life. It is recommended as an additional factor for prognosis of the course of these neoplasms.

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MICROFLORA OF DIGESTIVE TRACT IN COMORBIDITY OF DIABETES MELLITUS TYPE II AND CHOLELITHIASIS

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Key words: diabetes mellitus, gallstone disease, intestinal microflora.

Today, diabetes is considered a factor that provokes the development of gallstone disease. According to numerous reports, patients with diabetes demonstrated double frequency of detecting stones in the gall bladder compared with the general population. The gallstones formation is a long pathological process that is typically affected by simultaneous action of several factors. There are reports that bacteria in the digestive tract can regulate the metabolism of bile acids, changing their amount and chemical composition. Therefore, the study the intestinal microflora in the comorbidity of cholelithiasis and diabetes mellitus it is relevant. The purpose of the work is to analyze the microbiocenosis of the intestinal canal by the method of diagnosis of dysbiosis in patients with type 2 diabetes mellitus and concomitant cholelithiasis. Materials and methods. The results obtained by observing 39 patients with type 2 diabetes mellitus and concomitant cholelithiasis have been analyzed. The study included 24 (61, 5%) female patients, and 15 (38, 5%) male patients. The control group including 10 persons was formed according to sex and age distribution corresponded to the observation group, but with normal blood sugar levels. Microbiological examination of faeces for detecting dysbiosis was performed using standard techniques, taking into account the latest recommendations. Results. The study of intestinal microflora in the patients with combined pathology demonstrated 87, 2% of them were diagnosed to have microbiocenosis changes. Some bacteria were identified as opportunistic or those, which had virulence signs. Bacteria indicating normobiocenosis in many cases were not detected or manifested in insignificant quantities. Most of the patients (66,7%) had opportunistic enterobacteria of the genus *Enterobacter* and *Citrobacter*. 38,5% of the patients were detected to have pathogenic type – *S. aureus*. Hemolytic colon bacilli were detected in 10,2% of the patients. Other species were found in fewer cases. *Candida* fungi were detected in 59% of the patients. According to the degree of changes revealed, we distinguished 4 groups of intestinal microbiocenosis. In the control group, no pronounced changes in

microbiocenosis were detected; *Etherabacter aerogenes* with potential pathogenic properties were isolated in 20% of the patients. Conclusions. 87, 2% of the patients with the comorbidity of type 2 diabetes and cholelithiasis demonstrated significant changes in the intestinal microflora. Changes in the intestinal microbiocenosis correspond to the microbiological criteria of dysbiosis of varying degrees.

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FEATURES OF IMMUNE STATUS IN PATIENTS WITH COMORBIDITY OF BRONCHIAL ASTHMA AND OBESITY OR DIABETES TYPE II

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Key words: bronchial asthma, diabetes mellitus type II, obesity, cellular immunity indices.

This article presents the data on identifying key parameters of cell immunity in patients with asthma compared to those patients, who had comorbidity of asthma and obesity or asthma and type II diabetes mellitus (DM). The patients with asthma, as well as those with asthma and obesity or

asthma and DM were revealed to develop induced secondary immune deficiency due to cellular level of immunity. The comorbidity of asthma and type II diabetes is characterized by the most expressive negative changes in cellular immunity among all the patients studied. Despite the decrease in the number of B-lymphocytes, the patients with asthma, comorbidities of asthma and obesity as well as asthma and DM, their function by IgE production is kept high. In asthma, combined with type II DM, IgE concentration is reduced that can contribute to the change in the nature of the immune response in the patients and lead to more rapid formation of complications of both diseases.

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CLINICAL AND MORPHOLOGICAL CHARACTERISTICS OF HYPERPLASTIC UTERINE PROCESSES IN WOMEN WITH OBESITY AND EXTRAGENITAL PATHOLOGY IN DYNAMICS OF INTEGRATED TREATMENT

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Key words: uterine fibroids, hyperplastic endometrial processes, statins.

Uterine fibroids in women with obesity and somatic pathologies are typically associated with endometrial hyperplasia, among which complex non-atypical glandular-cystic endometrial hyperplasia (71.6%) is the most commonly diagnosed. The use of integrated treatment for 3 months leads to a decrease in the size of the uterus from 33% to 40%, decrease in sizes of fibroids from 51% to 67%, and results in the normalization of the functional and basal endometrial structures both at the histological and ultrastructural levels. However, throughout the treatment period in the subgroup 1a, the average size of the uterus and fibroids were smaller than in the subgroup 1b. After 6 months from the start of the treatment in the subgroup 1b, they increased by 13% and 25%. Such a difference in the sizes of the uterus and fibroids in the subgroups under study is associated, in our opinion, with the use of atorvastatin in the subgroup 1a that leads to a decrease in body weight and a decrease in the amount of adipose tissue. Thus, atorvastatin prolongs the therapeutic effect of the action of the gonadotropin-releasing hormone agonist 3 months after its last injection.

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EFFECT OF THERAPY WITH TELMISARTAN ON METABOLIC INDICATORS DEPENDING ON GENOTYPE OF POLYMORPHIC LOCUS A1166C OF ANGIOTENSIN II RECEPTOR TYPE I IN PATIENTS WITH ARTERIAL HYPERTENSION AND CONCOMITANT NON-ALCOHOLIC FATTY LIVER DISEASE

Zaitseva N.N.

Key words: arterial hypertension, non-alcoholic fatty liver disease, angiotensin II receptor first type polymorphism, telmisartan.

This article presents the evaluation of the effect of telmisartan therapy on metabolic parameters depending on the genotypes of the polymorphic A1166C locus of angiotensin II type I receptor in patients with arterial hypertension and comorbid non-alcoholic fatty liver disease by monitoring 55 patients with these comorbid pathologies. According to the results of the study, the patients with arterial hypertension and non-alcoholic fatty liver disease, who are carriers of the C / C genotype of the polymorphic locus A1166C of angiotensin II receptor type I demonstrated more significant changes in carbohydrate metabolism values, for instance, the glucose level was by 4.17% lower; insulin levels were by 11.88% and 9.2% 3% lower, and HOMA was by 11.75% and 8.88% lower than in carriers of A / A and A / C genotypes ($p < 0.05$). The dynamics of lipid metabolism in the examined patients, depending on the genotype of the polymorphic locus (A1166C) of angiotensin II receptor type I, was determined as follows: the greatest changes were reached by carriers of the C / C genotype: the triglyceride level was lower by 8.72% and 10.34% than in carriers of A / A and A / C genotypes, respectively, low-density lipoprotein cholesterol was lower by 5.73% and 10.87%, and the level of high-density lipoprotein cholesterol, on the contrary, increased by 3.67% and 5.31% ($p < 0.05$).

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METHODOLOGICAL APPROACH OF EVALUATING OPHTHALMOLOGICAL CARE IN UKRAINE

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Key words: methodological approach, evaluation, system of ophthalmological care, population.

The aim of the research was to provide scientific substantiation of the methodological approach to evaluate ophthalmological care providing to the population of Ukraine. The methodological approach proposed includes: the formation of part indices of the system of ophthalmological care to the population; calculation of complex of indices reflecting the condition of system components; calculation of integral indices of system component; clustering of Ukrainian regions in accordance with indices of components and evaluation of system; analysis of resistance of the clusters of regions of Ukraine and correlation between them; calculation of correlation between definite parts of evaluation system. The investigation performed with the use of proposed methodological approach to evaluate ophthalmological care providing to population in 2005 and in 2014 showed the

absence of resistant correlations between its parts that indicates the presence of a number of problems nearly in all the regions of Ukraine.

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PECULIARITIES OF USING SINGLE-PORT TECHNOLOGY DURING CHOLECYSTECTOMY IN PATIENTS WITH CHRONIC CALCULOUS CHOLECYSTITIS

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Key words: single-port access, single-port cholecystectomy, chronic calculous cholecystitis, cholelithiasis.

The improvement of endoscopic technology, the development of video cameras and special tools contributed to single-port laparoscopic surgery (SILS). The aim of the study was to evaluate the technical features of single-port interventions, to clarify the indications and the possibility of their use in performing single-port cholecystectomy in patients with chronic calculous cholecystitis. Materials and methods. During the period from 2015 to 2017, 102 patients underwent single-port laparoscopic (SILS) cholecystectomy for chronic calculous cholecystitis. The most effective according to the analysis, there were two variants of the arrangement of tools: the application of curved and direct tools, the application of simultaneously curved on the axis "Cuschieri" and curved on the corner "Dapri". The main technical feature of single-port cholecystectomy is the intersection of instruments 2. To perform single-port laparoscopic cholecystectomy, it is necessary to choose the most suitable single-port device and to use two layouts of tools.

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CHARACTERISTICS OF BUCCAL EPITHELIUM CELLS IN CHILDREN WITH ATOPIC DISEASES AND THEIR DENTAL STATUS

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Key words: atopic diseases, gingivitis, buccal epithelium.

The aim of this research was to study the morphological changes of nuclei of buccal epithelium cells and the dental status in healthy children and children with atopic diseases. A total of 60 patients aged 6-18 years were examined: 30 patients were diagnosed to have atopic diseases and 30 were assessed as healthy individuals. In the children with atopic diseases, there was a statistically significant difference in the indicators that characterize the degenerative changes of buccal cells. The most significant difference between the control and the experimental group was the difference in the degree of chromatin condensation (83.25 ± 0.95 in the experimental group) and the number of

heterochromic nuclei, as well as the presence of apoptosis cells. The DMF index in the experimental group was 1.8 ± 1.74 , while in the control group DMF index was 1.72 ± 1.37 , no statistically significant difference in the degree of caries activity was observed. The state of periodontal tissue according to the SBI index is equal to 0.56 ± 0.6 in the control group in the experimental group was at the level of 3.42 ± 0.42 . Conclusions. The performed research demonstrates the presence of cyto-logical changes in buccal epithelium cells in children with atopic diseases as compared to the healthy children. At the same time, the dental status of children with atopic diseases is manifested by inflammation of periodontal tissues, namely gingivitis.

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IMMUNOHISTOCHEMICAL CHARACTERISTICS OF PROLIFERATIVE ACTIVITY OF GASTRIC MUCOSA IN CHRONIC ATROPHIC GASTRITIS

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Key words: chronic atrophic gastritis, intestinal metaplasia, protein Ki-67, protein Bcl-2.

Nowadays due to identification of *Helicobacter pylori* as a factor of precancerous condition of gastric mucosa we have a possibility to prevent the development of cancer with detection of pathological changes causing irregularity of cells renewal and development of neoplastic transformation. This transformation is associated with the nuclear protein Ki-67, an inhibitor of apoptosis Bcl-2 and apoptosis in whole. The aim of the study was to detect the level of expression of Ki-67 as a proliferation marker and Bcl-2 as an inhibitor of apoptosis in chronic atrophic gastritis

with intestinal metaplasia. 30 biopsy specimens of gastric mucosa taken from patients with chronic helicobacter-associated gastritis with intestinal metaplasia and 20 specimens taken from patients with chronic non-atrophic gastritis were subjected to immunohistochemical investigations to detect the expression of Ki-67(DAKO, SP6) and Bcl-2(BCL-2, alpha Ab-1). In chronic gastritis without atrophy the percentage of cells expressing Ki-67 in the antral part made up $28,8 \pm 7,2$; in the angle - $30,6 \pm 6,4$; in the body of stomach - $26,8 \pm 8,3$. The percentage of cells expressing Ki-67 in chronic atrophic gastritis in the antral part made up $48,6 \pm 8,4$, in the angle - $44,8 \pm 7,6$, in the body of the stomach - $46,2 \pm 6,8$ ($p < 0,05$). The level of BCL-2 expression in non-atrophic gastritis was lower and the number of immunopositive cells in the antral part was $2,15 \pm 0,22$; in the angle - $1,98 \pm 0,14$; in the body of the stomach - $1,86 \pm 0,32$. In chronic atrophic gastritis BCL-2 expression was found in the antral part - $18,62 \pm 2,4$, in the angle - $16,86 \pm 2,60$, in the body of the stomach - $16,28 \pm 1,8$. Therefore, the raise of expression of markers of proliferation and apoptosis (Ki-67, Bcl-2 accordingly) in chronic atrophic helicobacter-associated gastritis with intestinal metaplasia confirms the impairment of cells regeneration and the presence of precancerous condition of gastric mucosa.

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BIOCHEMICAL AND IMMUNOLOGICAL MARKERS OF BLOOD SERUM IN PATIENTS AT EARLY STAGES OF GONARTHROSIS

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Key words: gonarthrosis, glycoproteins, chondroitin sulfates, sialic acids, glycosaminoglycans, immunoglobulins, circulating immune complexes.

The article deals with the diagnosis of metabolic disorders of the connective tissue of affected joints and to identify the immune status of patients with stage I–II gonarthrosis on the basis of laboratory markers of blood serum. According to the results of the study of biochemical markers in the blood serum of the patients in the I–II stages of gonarthrosis, an increase in the content of glycoproteins was observed by 55 %, sialic acids by 54.7 %, chondroitin sulfates were as high as 3.3 times, chondroitin-6-sulfate by 40 % in comparison with the indices in clinically healthy individuals that indicates the presence of inflammatory-destructive changes in the knee joints in the early stages of the disease. An increase in the number of circulating immune complexes in the blood of patients with gonarthrosis by 97.9 % compared with clinically healthy individuals indicates the activation of the compensatory mechanisms for removal of antigens resulted from the degradation of the cartilage tissue of the knee joints in the early stages of gonarthrosis. Having analyzed the biochemical markers of the state of connective tissue and findings of immunological tests performed in the early stages of gonarthrosis, we can conclude that they reflect the course of inflammatory-destructive processes in the knee joints in patients with gonarthrosis.

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CHARACTERISTICS OF INTEGRATED DIAGNOSTIC ALGORITHM IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

Pavlovskiy S. A.

Key words: nonalcoholic fatty liver disease, diagnosis, elastometry.

23 patients with non-alcoholic fatty liver disease were included into the study. To identify the diagnosis, the findings of clinical and laboratory, biochemical and instrumental studies, in accordance with the standards of examination of patients with pathology of organs of the gastrointestinal tract, were used. By the time of the examination, the patients did not receive the treatment of non-alcoholic fatty liver disease by standard schemes. 14 patients underwent ultrasound elastometry of the liver. It was established that non-alcoholic fatty liver disease had symptom-free course with periodic complaints of discomfort in the right hypochondrium, general weakness, and dizziness. Ultrasound scan showed 43.5% of patients with stage I, 43.5% of patients with the second stage, and 13% of the patients with the third stage of fatty hepatitis. Results of ultrasound elastometry (Steato Test) showed absence of steatosis in 21.4% of patients, moderate steatosis was diagnosed in 42.9% of patients and expressed steatosis was in 35.7% of cases. Minimal activity of the necrosis-causative process in the liver, absence or minimal manifestations of steatohepatitis, or absence of fibrosis was detected in 74,2% of patients, portal fibrosis without septum formation was revealed in 12,9%, multiple portocentral septa was in 12,9% of cases. The complex use of non-invasive methods, clinical and biochemical techniques, with the evaluation of the content of acute state blood proteins and ultrasound scan is a positive and important diagnostic algorithm in diagnosis non-alcoholic fatty liver disease.

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CLINICAL FEATURES OF SOMATOFORM DYSFUNCTION OF AUTONOMIC NERVOUS SYSTEM IN PATIENTS WITH CHRONIC NON-CALCULOUS CHOLECYSTITIS

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Key words: chronic non-calculous cholecystitis, somatoform dysfunction of autonomic nervous system.

The aim of this research was to study the clinical features of somatoform dysfunction of the autonomic nervous system (SDANS) in patients with chronic non-calculous cholecystitis (CNC) and its influence on the course of the underlying disease. The study involved 234 patients with CNC, 87 (37.2%) men and 147 (62.8%) women aged (47, $6 \pm 6, 8$) years. To characterize the state of autonomic nervous system and diag-nostics SDANS, we used A. Wayne tables, calculated Kerdo index, and evaluated sleep disorders. We obtained findings of blood pressure monitoring (ABPM) using the system "Cardiosens." The presence of SDANS in patients with CNC condition of autonomic nervous system was characterized by an imbalance of the autonomic nervous system with increased tone of the sympathetic division, which was more pronounced in impaired circadian rhythm of blood pressure. There was interrelation between the activation of the sympathetic nervous system index Kerdo and gallbladder wall in patients examined at CNC ($r = -0,41, p < 0.05$) and between the index and the index value Kerdo neutrophils / monocytes in the patients examined at CNC ($r = -0,37, p < 0.05$). SDANS CNC in the patients was characterized by activation of the sympathetic nervous system and by the indices of Wayne and Kerdo as well as by sleep deterioration. The presence of SDANS in patients with CNC is accompanied by more pronounced changes in the gallbladder and higher intensity of inflammation.

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HORMONAL RELATIONSHIPS AND PATHOGENETIC LINKS OF AUTOIMMUNE THYROIDITIS AND OSTEOARTHRISIS

Pasiyeshvili L.M.

Key words: autoimmune thyroiditis, osteoarthritis, pro-inflammatory cytokines, cartilage oligomeric matrix protein.

The frequent combination of osteoarthritis (OA) and autoimmune thyroiditis (AIT) was the basis for studying reciprocal effects of diseases in the course of this comorbidity. The state and role of the cartilage oligomeric matrix protein (COMP), which is considered a marker of the state of cartilaginous tissue, and pro-inflammatory cytokines-TNF- α and IL-2, have been investigated. Fifty-four patients with AIT were examined, which in 35 cases occurred against OA (main group). Functional state of thyroid gland in 79.6% of the patients in the main group and 77.9% in the comparison group was assessed as hypofunction. In other cases, the euthyroid state was maintained. X-ray examination of the joints revealed the first stage of the disease in 24.1% of patients, the second stage in 53.7% patients, and the third stage in 22.2% of patients. An increase in 2.6 times of the level of TNF- α with comorbidity of AIT and OA in relation to the normal state was established in the work, against 1.3 times with isolated AIT. The IL-2 index also exceeded the control values (by 1.5 times), but did not differ between the groups. The value of COMP in the patients with AIT and OA increased in 2.3 times and depended on the severity of morphological changes in the joint. However, its dependence on the severity of inflammatory changes in the joints and functional activity of the thyroid gland was not established. Thus, the indices of TNF- α and IL-2 can be used in evaluating the activity of the inflammatory process and the expression of the autoimmune component, and the content of COMP for assessing the state of the cartilaginous tissue and the effectiveness of OA therapy.

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AGE-RELATED CHARACTERISTICS OF CONNECTIVE TISSUE METABOLISM IN PATIENTS WITH OSTEOCHONDROSIS OF LUMBAR SPINE

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Key words: connective tissue, age, osteochondrosis, glycoproteins, chondroitin sulfates, chondroitin-6-sulfate, chondroitin-4-sulfate.

The article is devoted to assessing biochemical markers of the state of connective tissue in patients of all ages having pathological processes in osteochondrosis of the lumbar spine. In the first group of patients, the content of glycoproteins was increased by 36.8 %, in the second group by 71.9 %, in the third group by 91.2 %, and in the fourth group by 78.9 %. The content of chondroitin sulfates in serum of the first group of patients was increased by 2.26 times, in the second group – in 3.68 times, in the third group in 3 times, in the fourth in 4.29 times. The differences in the content of chondroitin sulfates in the 1, 2, 3 and in 4 groups of patients were determined. The content of chondroitin sulfate in the second group was increased by 62.3 %, in the third – by 34.4 %, in the fourth – by 89.6 %. General GAGs were increased only in the 3-rd group of patients by 11.2 %. The content of chondroitin-6-sulfate in the first group of patients was increased by 42.3 %, in the second – by 44.2 %, the third – by 47.1 %, the fourth – by 62.5 %. The content of chondroitin-4-sulfate also increased with age. An increase in blood serum glycoproteins occurred in all age groups, indicating an inflammatory process, the degree of which did not depend on age. The content of chondroitin sulfates in the blood of patients increased with age due to chondroitin-6-sulfate, in the oldest groups, chondroitin-4-sulfate, due to the highest degree of destruction of cartilage and bone tissue of the lumbar spine.

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CEREBRAL DISORDERS IN ARTERIAL HYPERTENSION HOW CAN STATINS HELP?

Puzik S.G.

Key words: arterial hypertension, cerebral disorders, prevention, treatment, dyslipidemia, statins.

The article analyzes the archival material of the case histories of patients referred to the neurological in-patient department with signs of cerebral disturbances against arterial hypertension. The nature and frequency of cerebral disorders were compared with the degree of arterial hypertension, lipid spectrum was assessed and the rationale for prescribing statins for primary and secondary prevention of cerebral complications of arterial hypertension was evaluated. It was proven that arterial hypertension, regardless of its degree, was complicated by acute and chronic cerebral disorders, which manifested by the development of ischemic, hemorrhagic, lacunar stroke and transient ischemic attack, dyscirculatory encephalopathy and conditions after a previous history of a stroke. It has been proven that the patients with arterial hypertension have a very high

cardiovascular risk and require compulsory prescription of statins for primary and secondary prevention of cerebrovascular disease. These studies confirm that in real clinical practice a great advantage is given to assessing total cholesterol, rather than cardiovascular risk, and therefore statins are unreasonably prescribed for primary and secondary prevention of cerebral disorders in hypertension.

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CLINICAL EFFECTIVENESS OF S-ADENOSYLMETHIONINE AND MELDONUM IN COMORBIDITY OF NON-ALCOHOL STEATOHEPATITIS, OBESITY AND CHRONIC KIDNEYS DISEASES OF 1 STAGE

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Key words: non-alcoholic steatohepatitis, chronic kidney disease, clinical syndromes, S-adenosylmethionine, meldonium.

The article summarizes the results of the clinical efficacy of S-adenosylmethionine in patients with non-alcoholic steatohepatitis in comorbidity with obesity and chronic kidney disease of the I-II stage, which produces powerful membrane-stabilizing effects in relation to affected hepatocytes, stably eliminates clinical manifestations of the disease, cytolysis intensity, cholestasis, mesenchymal inflammatory syndrome, inhibits the progression of hepatic cell and renal dysfunction (increases albumin synthesis hepatic function of the liver, glomerular filtration rate) by optimizing control of liver and kidney fibrosis. Complex therapy with S-adenosylmethionine and meldonium is superior in efficiency with respect to the correction of these syndromes of non-alcoholic steatohepatitis and chronic kidney disease, as meldonium significantly potentiates the action of S-adenosylmethionine in acute and long-term observation periods.

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EFFECT OF DISTRIBUTION PRO197LEU POLYMORPHISM OF GLUATHIONE PEROXIDASE-1 GENE ON THE INDICES OF THE SYSTEM OF BLOOD PLASMA FIBRINOLYSIS IN PATIENTS WITH CIRRHOSIS

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This research aimed at studying peculiarities of the indices of fibrinolysis system in patients with liver cirrhosis depending on Pro197Leu glutathione peroxidase-1 gene polymorphism. Methods. 28 patients with liver cirrhosis were involved into the study. We assessed Pro197Leu polymorphism gluathione peroxidase-1 gene, total, non-enzymatic, and enzymatic fibrinolysis of blood plasma. Results. Estimation of the indices of fibrinolytic blood activity in patients with liver cirrhosis showed that total fibrinolytic activity and enzymatic fibrinolytic activity were reliably lower than that of the control indices at the same time non-enzymatic fibrinolytic activity increased and did not reveal their dependence on the distribution of Pro197Leu polymorphism of glutathione peroxidase-1 gene. Conclusions. Pro197Leu polymorphism of glutathione peroxidase-1 gene does not influence upon the indices of the system of fibrinolysis in patients with liver cirrhosis.

Key words: liver cirrhosis, polymorphism, glutathione peroxidase-1 gene, fibrinolysis.

The article is a fragment of the planned comprehensive research of the Department of Internal Medicine and Infectious Diseases of the Higher State Educational Establishment of Ukraine "Bukovinian State Medical University" "Molecular-genetic and clinical-pathogenetic features of the comorbid pathology of internal organs, role of infectious, metabolic factors in its development, differentiated approaches to the treatment" (registration number 00117U002353)

Introduction

The data available concerning the components of chronic diffuse liver disease pathogenesis allow us to detect the range of genes-candidates, whose potential relations with this pathology need further investigation [6, 11]. The difference of marker allele frequency in patients with certain pathology and healthy individuals gives the evidence to draw a conclusion about the correlation between a particular allele and the pathology studied [2, 4, 6, 11]. The analysis of genetic associations plays an important role in the evaluating genetic factors involved in the development of polymorphic diseases, and liver cirrhosis in particular [6, 10, 11].

Due to recent scientific research both of Ukrainian and international scientists the concept of relations between indices of fibrinolysis and expression of various genes is beyond any doubt [1, 3, 5,

9]. Nevertheless, the dependence of the above indices upon Pro197Leu glutathione peroxidase-1 (GPX1) gene in patients with liver cirrhosis deserves more detailed study.

This research aims at studying peculiarities of the indices of the fibrinolysis in patients with liver cirrhosis depending on Pro197Leu polymorphism in GPX1 gene.

Materials and methods

30 patients with liver cirrhosis aged from 39 to 68 were examined. Depending on the distribution of GPX1 gene Pro197Leu polymorphism the patients were divided into three groups: ProPro - genotype carriers – 12 patients, ProLeu -genotype – 9, LeuLeu -genotype – 9.

The diagnoses of liver cirrhosis were verified on the basis of complaints, anamnesis, objective status, and standard laboratory techniques of ex-amination (general clinical blood and urine analyses, biochemical blood test – general bilirubin and its fractions, sublimate and thymol tests, ionogram, proteinogram, coagulogram). The activity of the following blood enzymes was examined: alaninaminotransferase (AlAT), aspartate amino transferase (AsAT), gamma glutamyl transferase (GGT), alkali phosphatase (AP). The levels of urea, creatinine were detected in the blood as well as se-rum markers of hepatitis B and C viruses. Instru-mental examinations were conducted (USD of the abdominal organs, esophago-gastroduodenofibros-copy (EGDFS)).

The degree of activity of liver cirrhosis was as-sessed by the clinical manifestations and biochemical signs as AlAT, AcAT activity, thymol test, blood bilirubin level [8]. The degree of liver cirrhosis compensation was estimated by the criteria of C.G. Child and J.G. Turcotte (1964) modified by K.N.H. Pugh (1973). The levels of bilirubin, albumins, prothrombin were evaluated in the blood serum, the presence of ascites and encephalopathy was found [7].

The patients with decompensated liver cirrhosis (III degree of hepatic-cellular failure, hypoalbuminemia less than 30%, III-IV degree of hepatic en-cephalopathy, resistant ascites, systemic hypoten-sion), chronic hepatitis of a viral aetiology, Wilson's disease, congenital α 1-antitripsin insufficiency (α 1-inhibitor of proteinases), idiopathic (genetic) hemochromatosis, autoimmune hepatitis, diabetes mellitus, III-IV degree of chronic heart failure with ejection fraction of the left ventricle less than 45%, acute disorders of the cerebral circulation and acute coronary syndrome, psychic disorders, residents of the III-IV zones of radiation contamination, individuals during pregnancy or lactation period or those receiving oral contraceptives, with any acute inflammatory processes, other concomitant decompensated diseases or acute conditions able to affect the results of the study, were excluded from the investigation.

Alleles of Pro197Leu regions in GPX1 gene were studied by means of extraction of DNA ge-nome from leukocytes of the peripheral blood with further amplification of a polymorphic region by polymerase chain reaction (PCR) on the programmed amplificatory device "Amplify-4L" ("Biocom", Moscow) with individual temperature program for the parameters of every gene. Table 1 shows succession of oligonucleotides in primers and their calculation positions on chromosomes.

DNA extraction was performed by "DNA-sorb-B" reagents, variant 100 (Russia) according to the in-struction. Purified DNA was kept under the tem-perature of $20\pm 20^{\circ}\text{C}$. Samples for PCR were prepared by using "AmplifySense – 200 – 1" (Russia).

Succession of oligonucleotides in primers used for polymerase chain reaction (PCR) to identify Pro197Leu polymorphism of GPX1 gene

Gene name	Gene localization on chromosome	Primer	Succession of oligonucleotides in primers
GPX1	3p21	Direct	5'-TCGAAGCCCTGCTGTCTCA-3'
		Reverse	5'-CGAGACAGCAGCACTGCAA-3'

Total non-enzymatic and enzymatic fibrinolysis of citrated blood plasma was estimated by asofibrinolysis (Simko Ltd., Ukraine).

The results obtained are calculated by applying Biostat program with ranking by Student t-criterion.

Results and Discussion

Examination of blood fibrinolytic activity demonstrated a reliable decrease in total fibrinolytic activity index by 16,8% ($P < 0,001$) due to reduced enzymatic portion of fibrinolysis (on 42,1%, $P < 0,001$). The index of non-productive non-enzymatic, being by 43,1% higher ($P < 0,001$) than that of the control, increased against this ground.

Thus, the patients with liver cirrhosis demonstrate inhibition of fibrinolytic blood plasma activity occurring due to the inhibition of enzymatic fibrinolysis as well as compensatory increase in non-enzymatic fibrinolytic activity.

Thus, endothelial dysfunction caused by pathological mechanisms such as oxidant stress and increased cellular adhesion is likely to inhibit fibrinolytic blood activity in the examined patients.

Table 2 presents the results of examination of fibrinolysis in the patients with liver cirrhosis depending on the distribution of Pro197Leu polymorphism of GPX1 gene.

Examination of fibrinolytic blood activity showed that total fibrinolytic activity of the blood plasma in the patients of all the groups was reliably lower than that of the control values: in the patients with ProPro-genotype by 19,0% ($P < 0,001$), with ProLeu-genotype and LeuLeu-genotype by 16,6% ($P < 0,001$) and 14,7% ($P < 0,01$) respectively without reliable difference between the groups.

Table 2

Indices of the fibrinolysis in patients with liver

cirrhosis depending on Pro197Leu polymorphism of GPX1 gene ($M \pm m$)

Index	Control group n=20	Genotypes of GPX1 gene, n=28		
		ProPro, n=12	ProLeu, n=9	LeuLeu, n=9
Total fibrinolytic activity, mcmol azofibrin/1mL per hour	1,63±0,041	1,32±0,049 $P_1 < 0,001$	1,36±0,058 $P_1 < 0,001$ $P_2 > 0,05$	1,39±0,051 $P_1 < 0,01$ $P_2 > 0,05$ $P_3 > 0,05$
Non-enzymatic fibrinolytic activity, mcmol azofibrin/1mL per hour	0,51±0,019	0,69±0,032 $P_1 < 0,001$	0,74±0,018 $P_1 < 0,001$ $P_2 > 0,05$	0,76±0,021 $P_1 < 0,001$ $P_2 > 0,05$ $P_3 > 0,05$
Enzymatic fibrinolytic activity, mcmol azofibrin/1mL per hour	1,12±0,051	0,65±0,081 $P_1 < 0,001$	0,71±0,070 $P_1 < 0,001$ $P_2 > 0,05$	0,59±0,072 $P_1 < 0,001$ $P_2 > 0,05$ $P_3 > 0,05$

Notes: n- numbers of observations; P1 – probability of changes relating the control; P2 – probability of changes relating the group of the patients with ProPro-genotype; P3 – probability of changes relating the group of the patients with ProLeu-genotype.

Non-enzymatic fibrinolytic activity in the patients of all the groups elevated, and increasing of this index in comparison with the control group was indicative of the following: by 35,3% ($P<0,001$), 45,1% ($P<0,001$), and 49,0% ($P<0,001$) in the carriers of ProPro-, ProLeu- and LeuLeu-genotype respectively.

Reliable decrease of enzymatic fibrinolytic activity of all the groups concerning the control values was found: for the carriers of ProPro-genotype – on 42,0% ($P1<0,001$), ProLeu-genotype – on 41,3% ($P1<0,001$) and 51,2% ($P1<0,001$) for the patients with LeuLeu-genotype.

Thus, Pro197Leu polymorphism of GPX1 gene does not influence upon the indices of the system of fibrinolysis in patients with liver cirrhosis.

Conclusions

Examination of the indices of fibrinolytic blood activity in patients with liver cirrhosis showed that total fibrinolytic activity and enzymatic fibrinolytic activity was reliably lower than that of the control indices at the same time non-enzymatic fibrinolytic activity increases.

Pro197Leu polymorphism of GPX1 gene does not influence upon the indices of the system of fibrinolysis in patients with liver cirrhosis.

The prospects of further investigation require in-depth studies of the pathogenetic peculiarities of liver cirrhosis in order to find out the mechanisms of their occurrence and progression and substantiation of the improved methods to correct and prevent the disease.

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Реферат

ВПЛИВ ДИСТРИБУЦІЇ PRO197LEU ПОЛІМОРФІЗМУ ГЕНА ГЛУТАТІОНПЕРОКСИДАЗИ 1-ГО ТИПУ НА МАРКЕРИ СИСТЕМИ ФІБРИНОЛІЗУ ПЛАЗМИ КРОВІ У ХВОРИХ НА ЦИРОЗ ПЕЧІНКИ

Чимпой К.А.

Ключові слова: цирроз печінки, поліморфізм, глутатіонпероксидаза 1-го типу, ген, фібриноліз.

Мета дослідження. Вивчити особливості показників системи фібринолізу у хворих на цирроз печінки залежно від Pro197Leu поліморфізму гена GPX1. Матеріали та методи. Обстежено 30 хворих на цирроз печінки. Визначено Pro197Leu поліморфізм гена GPX1, загальну фібринолітичну, ферментативну та неферментативну фібринолітичну активність плазми крові. Результати. У хворих циррозом печінки встановлено порушення фібринолізу зі зниженням сумарної і ферментативної фібринолітичної активності плазми крові на тлі зростання непродуктивної неферментативної фібринолітичної активності, а також відсутність залежності показників системи фібринолізу від дистрибуції Pro197Leu поліморфізму гена GPX1. Висновки. Дистрибуція Pro197Leu поліморфізму гена GPX1 не впливає на показники системи фібринолізу у хворих на цирроз печінки.

Реферат

ВЛИЯНИЕ ДИСТРИБУЦИИ PRO197LEU ПОЛИМОРФИЗМА ГЕНА ГЛУТАТИОНПЕРОКСИДАЗЫ 1-ГО ТИПА НА ПОКАЗАТЕЛИ СИСТЕМЫ ФИБРИНОЛИЗА ПЛАЗМЫ КРОВИ У БОЛЬНЫХ ЦИРРОЗОМ ПЕЧЕНИ

Чимпой К.А.

Ключевые слова: цирроз печени, полиморфизм, глутатионпероксидаза 1-го типа, ген, фибринолиз.

Цель исследования. Изучить особенности показателей системы фибринолиза у больных циррозом печени в зависимости от Pro197Leu полиморфизма гена глутатионпероксидазы 1-го типа. Материалы и методы. Обследовано 30 больных с циррозом печени. Определено Pro197Leu полиморфизм гена GPX1, общая фибринолитическая, ферментативная и неферментативная фибринолитическая активность плазмы крови. Результаты. У больных циррозом печени установлено нарушение фибринолиза со снижением суммарной и ферментативной фибринолитической активности плазмы крови на фоне роста непродуктивной неферментативной фибринолитической активности, а также отсутствие зависимости показателей системы фибринолиза от дистрибуции Pro197Leu полиморфизма гена глутатионпероксидазы 1-го типа. Выводы. Дистрибуция Pro197Leu полиморфизма гена глутатионпероксидазы 1-го типа не влияет на показатели системы фибринолиза у больных циррозом печени.

ASSESSMENT OF COMPLIANCE TO TREATMENT OF ELDERLY PATIENTS WITH ARTERIAL HYPERTENSION

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Key words: arterial hypertension, elderly patients, compliance.

The issue on increase in the effectiveness of therapy of arterial hypertension in elderly patients is extremely relevant, taking into account the general demographic trends, the high incidence of this disease, high fatalities of complications and the presence of comorbidity in this category of patients. According to statistics, one of the main causes of inadequate effectiveness of therapy of arterial hypertension is poor compliance to therapy. The aim of the work was to identify and investigate the main factors influencing the compliance to antihypertensive therapy in elderly patients with arterial hypertension. Materials and methods. Under our supervision, there were 54 patients over 65 years (mean age 69.2 ± 1.5 years) with arterial hypertension. Socio-demographic, clinical, pathopsychological, psycho-diagnostic methods (MMAS, anxiety self-assessment scale, C. D. Spielberger – Y.L Hanin scale, the Scale of Internality in relation to health and illness, the study of the self-esteem of mental states by H.J. Eysenck, the study of the level of depression by the Beck Depression Inventory), mathematical and statistical methods were used. According to the results of the MMAS survey, three groups of patients were selected - with high (22.2%), middle (33.3%) and low (44.55%) levels of compliance to the combined therapy of hypertension. Socio-demographic factors in the patients with low compliance to the treatment were determined by low level of education and absence of marital relations. Clinical characteristics of patients with low compliance included the presence of 3rd degree of arterial hypertension severity, I stage of this disease, high frequency of exacerbations, comorbidity of diabetes mellitus II, chronic obstructive pulmonary disease, ischemic heart disease, tobacco smoking. According to the psychopathological and psycho-diagnostic examination, patients with an internal type of personality control, low anxiety and depression showed, for the most part, a low level of compliance and more frequent aggressiveness in the self-esteem of mental states ($p < 0.05$). Thus, elderly patients with arterial hypertension very often (up to 78%) show an insufficient level of compliance to the treatment. Socio-demographic, clinical and psychopathological factors significantly affect the level of compliance in these patients. Improving the effectiveness of therapy of arterial hypertension in elderly patients is possible due to

optimization of treatment regimens, wide introduction of psycho-diagnosis and psychological correction with the involvement of psychologists into this process.

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RESULTS OF CLINICAL INSPECTION OF PATIENTS WITH DIABETIC NEPHROPATHY IN DYNAMICS OF TREATMENT WITH EPLERENONE

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Key words: diabetic nephropathy, hypertensive disease, aldosterone receptor antagonists, eplerenone.

The aim of the study was to investigate the efficacy of eplerenone, a selective aldosterone receptor antagonist, in combined therapy of patients with diabetic nephropathy and hypertension. We examined 57 patients with diabetic nephropathy of stages I-III (glomerular filtration rate > 60 ml / min) with comorbid stage II hypertension. It was found out that both basic therapy and that combined with eplerenone led to a significant decrease in blood pressure, but no significant differences between the groups were found. The levels of creatinine and glomerular filtration rate were not significantly different as well. A differentiated evaluation of the results of treatment using basic therapy and that combined with eplerenone showed significantly higher efficacy of combined therapy on kidney functional state by reducing the level of microalbuminuria.

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DIFFERENCIAL INDICATIONS AND METHODS OF COMPLEX THERAPY OF PATIENTS WITH ACNE AND CONCOMITANT CANDIDAL INFECTION

Yaacoubi Randa

Key words: *fungi, acne, pathogenesis, candidiasis, malassezia, patients, immunity.*

Objective: to increase the effectiveness of treatment of patients with acne accompanied by candidal infection by developing an integrated differential therapy including etiotropic and pathogenesis drugs, medicines for external use taking in to account some regulatory systems of homeostasis. 120 patients with acne were monitored, 55 (45.8%) men, 65 (54.2%) women aged 16-27 years. Papule-pimples acne was diagnosed in 102 of 120 patients and 18 patients were diagnosed to have nodular and cystic acne. All the patients with acne had an exacerbation stage. 40 patients had the first degree of severity (33.3%), 62 patients had the second degree (51.7%) and 18 patients had third degree (15%) of the disease severity. Out of 120 patients, 100 were diagnosed with Malassezia, and 60 patients had candidiasis of facial skin. Different levels of clinical features, different laboratory

findings, character of concomitant diseases were identified that enabled to distribute the patients into clinical groups. Depending on the group, the patients were prescribed the therapy including etiotropic and pathogenesis drugs, and topical drugs.

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HEART RATE VARIABILITY IN CASES OF COMORBID HYPERTENSION AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Key words: heart rate variability, obstructive pulmonary disease, hypertension.

Chronic obstructive pulmonary disease is holding one of the leading positions in mortality and prevalence worldwide. One of the frequent concomitant diseases in COPD is hypertension, which is diagnosed in 49.6-63.4% of patients. Therefore, it is very important to study neurology systems in the comorbid course of these diseases. Objectives: to study of heart rate variability in COPD in combination with essential hypertension (EH). 112 patients with the diagnosis of COPD 2-3 stages in the acute phase divided into two groups were examined. The first group included 50 patients with COPD without concomitant pathology, the second group included 62 patients with a comorbid course of COPD 2-3 st. and stage 2 EH. Thus, a significant decrease in such indicators as SDNN, TP was revealed. However, there was no significant difference between the groups of such

parameter as RMSSD. Analysis of HRV frequency showed significant differences between such indicators as LF norm, HF norm, and their ratio LF / HF towards increasing low-frequency oscillations. There were no significant differences between the stress index (SI) of the control and main groups. A reliable increase in the activation indices of the sympathetic nervous system was revealed. There was a decrease in such spectral displays, as SDNN and TP in the main group compared to the control group.

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DENTISTRY

STRUCTURE OF MAXILLOFACIAL ANOMALIES IN DRAFT-AGE PERSONS

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Key words: dental health, draft-age persons, structure of maxillofacial anomalies.

This research paper presents the data on the dental health of draft-age persons. It has been found out that the prevalence of partial secondary adentia makes up 27.5%, with the tooth loss ratio of more than half dentition reaching 44.4%. It has been revealed that draft-age persons require orthodontic treatment to correct the dentition after cheiloplasty and uranoplastics (13.2%), to improve the lower and upper macrognathia (12.5% and 0.4%), to correct the lower and upper micrognathia (1 , 6% and 8.2%), frontal protrusion of the upper jaw (3.5%) and other dentofacial deformities

(13.9%). These draft-age persons, due to malocclusion and low chewing efficacy, require mandatory orthodontic treatment. To improve the quality of the health of draftees with maxillofacial deformities and disorders, it is necessary to improve the diagnostic criteria of the abnormalities and pathologies revealed, to optimize and widely introduce in the dental practice treatment and preventive measures aimed at improving the quality of life of draftees and servicemen.

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CHANGES IN LEVELS OF INTERLEUKINS 6, 8, 10 IN ORAL LIQUID OF CHILDREN LIVING IN AREAS WITH DIFFERENT POLLUTION LEVELS

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Key words: children, oral fluid, caries, cytokines, contaminated territories.

For a better understanding of the mechanisms of caries development, it is necessary to study the influence of the external environment on the pathogenesis of this pathology. The aim of the research was to study the changes in the cytokine status of the oral fluid in children of different ages living in areas with different type of pollution. To achieve the goal, the schoolchildren of Lutsk, Manevichi and Novovolynsk (198 persons) were divided into groups: 12 and 15 years with DFM > 5 teeth. The control group consisted of children of the same age and place of residence, but with DFM < 3 teeth. In the oral fluid of the children, the levels of IL-6, IL-8, IL-10 were determined using a set of reagents from Vector Best, Russia. Analyzing the dynamics of changes in the content of cytokines, we found that with increasing age, the production of IL-6, 8 and 10 increases. The concentration of cytokines increases in the control groups, and especially in the groups of children with dental caries. High rates of cytokines were detected in children of different ages with caries, residents of contaminated areas. Changes in the coefficient of IL-6 / IL-10, indicate the hyperproduction of IL-10, performing a protective-adaptive role, strengthening the humoral immunity and inhibiting cell-mediated reactions. So, the levels of IL-6, 8, 10 in oral fluid of children with caries increase depending on the level of contamination of the territory of residence. The coefficient of IL-6 / IL-10 in children decreases with age and does not depend on the level of contamination of the territory of residence.

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FACTORS FOR CHRONICITY OF LIP AND ORAL MUCOSA LESIONS AND MUCOUS MEMBRANE AGAINST DERMATOSES

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Key words: cheilitis, chronic dermatoses, cytokines (pro-inflammatory, anti-inflammatory, regulatory).

Lesions of the vermilion border and oral mucosa against chronic dermatoses are a challenge for specialists in many specialties (dentists, dermatologists, immunologists, oncologists, etc.) associated with the complexity of the pathogenetic mechanisms of their development. To determine the dependence of the severity of atopic dermatitis, microbial eczema, candidiasis, acne against lesions of the vermilion border and / or oral mucosa on changes in the cytokine status, blood levels of tumor necrosis factor-alpha, interleukins 4, and 12, interferon-gamma were studied by the enzyme immunoassay in all patients. An increase in the levels of pro- and anti-inflammatory cytokines (respectively, tumor necrosis factor-alpha and interleukin-4) was found in all the cases of dermatoses, which were more pronounced against lesions of the vermilion border and / or oral mucosa. Levels of regulatory cytokines (interleukin-12 and interferon-gamma) in patients without

lesions of the vermilion border and oral mucosa were elevated, but the number of such lesions was reduced in comparison with the control group of healthy individuals. The obtained data dictate the necessity of carrying out cytokine monitoring, as well as studying the possibilities of using appropriate cytokines in the treatment of such patients.

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COMPARATIVE ASSESSMENT OF NON-REMOVABLE ORTHODONTIC APPLIANCES IN TREATMENT OF MANDIBULAR ALVEOLAR FRACTURES IN PAEDIATRIC PATIENTS.

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Key words: paediatric patients, mandibular alveolar fractures, monomaxillary fixation, non-removable orthodontic appliances.

Searching the better approach to the treatment of traumatic maxillofacial injuries is still urgent that can be explained by the lack of adequate fixation methods of bony fragments, peculiarities of anatomical structure of deciduous teeth (low equator, trapezoidal crown shape and small size of teeth) as well as with potential complications such as mandibular development disturbances, deformative arthrosis and ankylosis of TMJ, appearance of pathological occlusion and tooth structure, esthetic problems etc. Moreover, a majority of well-known methods of mono- and intermaxillary fixation successfully used for adult patients, are not applicable for children due to above mentioned peculiarities of bite and anatomical structure of teeth. These factors motivated us to use non-removable orthodontic appliances for fixation of alveolar fragments and dislocated teeth in paediatric patients. This research paper presents the results of comparative clinical assessment of non-removable orthodontic appliances (brackets, buttons) for monomaxillary fixation in 20 patients aged 4-12 years with traumatic mandibular alveolar fractures and teeth dislocations, describes the advantages of the method and gives a clinical example.

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APPROACHES TO IMPROVE TREATMENT OF PATIENTS WITH DENTOFACIAL ANOMALIES COMPLICATED WITH DENTAL CROWDING IN MIXED DENTITION

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Key words: teeth crowding, dentofacial anomalies, mixed dentition, orthodontic treatment.

To make a correct diagnosis of dentoalveolar anomalies complicated with teeth crowding, it is important to apply all up-to-date methods and techniques, and treatment should be based on a patient-centered approach to the choice of treatment means. The findings of comprehensive examination and orthodontic treatment of 37 patients (21 girls, 16 boys) aged from 8 to 11 years with the diagnosis of dentofacial anomalies complicated by severe teeth crowding (III-IV degree according to SN Snagina) were analyzed. The treatment of dentofacial anomalies complicated by teeth crowding of teeth during the mixed dentition was carried out by taking into account the growth prospects of the jaws. The patients used orthodontic devices to correct the direction of jaw growth and there were no cases of permanent teeth extraction. The proposed method of orthodontic correction of the tooth crowding in mixed dentition with corrective removal of temporary molars allowed us to preserve the total number of permanent teeth and reduce the period of active instrumental treatment.

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INDICATORS OF BONE TISSUE METABOLISM IN PATIENTS WITH JAW FRACTURES AND CONCOMITANT GENERALIZED PERIODONTITIS

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Key words: fractures of jaws, generalized periodontitis, bone formation, bone remodeling markers.

The article presents data of osteogenesis markers (transforming growth factor – $\beta 1$, osteocalcin, cartilage oligomeric matrix protein, C-terminal propeptide of type 1 collagen, pridinol crosslinks) in patients with jaw fractures against generalized periodontitis (GP) (group A, n=45) and patients with similar traumatic injuries without concomitant periodontal disease (group B, n=41). The obtained data were compared with the same of healthy people (control group, n=32). The purpose of research was to study the dynamics of bone remodeling markers in patients with fractures of the jaws against generalized periodontitis. The immunoassay techniques were applied in the study. The content of TGF- $\beta 1$ markers of bone metabolism was determined using the set of „TGF- $\beta 1$ ”, osteocalcin was measured by „N-MID Osteocalcin ELISA”, cartilage oligomeric matrix protein (COMP) was evaluated by „Human Cartilage Oligomeric Matrix Proteine ELISA”, C-terminal propeptide of type 1 collagen (C1CP) was assessed by „MicroVue TM C1CP EIA Kit”, pridinol crosslinks were assessed by the set of Metra Serum PYD EIA Kit” It was found that the patients with fractures of the jaws against generalized periodontitis demonstrated the decrease in the content of osteocalcin, C-terminal telopeptide of collagen, transforming growth factor – $\beta 1$ that was accompanied by the increase in the content of bone resorption markers compared to the data of the patients of B group (fractures of the jaws without generalized periodontitis). Conclusions. It has been found out disorders in people with fractures of the jaws and concomitant generalized periodontitis are accompanied by a number of metabolic changes characterized by the signs of inhibition of biosynthetic processes and intensification of osteodestructive processes in bone tissue. This significantly differs from the data obtained in the patients with fractures of the jaws without concomitant periodontal diseases.

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COMPARATIVE CHARACTERISTIC OF JAW GROWTH TYPE IN PATIENTS WITH DENTOFACIAL ANOMALIES ACCORDING TO ANGLE'S CLASS II1 AND II2

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Key words: dentofacial anomalies, malocclusion, distal occlusion, the growth type, orthopantomography, basal angle (<B).

Determination of the growth type for jawbones is of a great diagnostic significance in making treatment plan and prognosis of orthodontic correction. The aim of the research: was to study the growth type of jaw-bones in patients with dentofacial anomalies according to Angle's II1 and II2 . 102 orthopantomograms of patients included into the study were divided into two groups: the I group - 57 patients with diagnosis of II1 malocclusions, the II group was made up of 45 patients with II2 malocclusions according to Angle's classification. In cases of II1 malocclusion <B was $24,96 \pm 0,66^\circ$ on the right side, $24,68 \pm 0,7^\circ$ - on the left, in cases of II2 - $23,6 \pm 0,63^\circ$, and $23,36 \pm 0,57^\circ$. Conclusions: The data of <B in cases of II1 and II2 malocclusion according to by Angle did not differ sufficiently and they were indicative of a neutral type of growth. The most unusual for the pathology of class II is the horizontal type of the growth. When comparing types of growth by sex, it was found out that in class II1, the neutral type of growth is more common in male patients, while in class II2, shows a larger percentage of the neutral type of growth found in female patients.

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PREVENTION OF IATROGENIC FACIAL NERVE INJURY DURING FACELIFT

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Key words: stressed paramedical SMAS lifting, damage to the branches of the facial nerve.

Iatrogenic damage to the sensory nerves and motor branches of the facial nerve is much more likely to occur when performing multi-level suspenders with extensive dissection fields. This is one of the examples when struggling for the best and most stable results, the facelift turns out to produce such unpleasant consequences. The purpose of the study was to register and compare the frequency of intraoperative injury of facial nerve branches in patients undergoing the classic SMAS facelift or paramedical SMAS lifting. The study involved 160 women aged 40 - 75 years who have had a facelift. We have proposed a new method of performing face lift. The fundamental difference is that the formation of dissecting pocket under the structure of SMAS is performed much more medially than in the accepted classical techniques. On the basis of the conducted study, it becomes evident that the technique of paramedial SMAS lifting, along with obtaining a pronounced and stable aesthetic result, significantly reduces the risk of damage to the facial nerve branches.

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PREVALENCE OF HARD DENTAL TISSUE DISEASES IN ADOLESCENTS

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Key words: prevalence rate, lesions of hard dental tissues, adolescents, caries, diagnosis, prevention.

Students, for a number of reasons, are observed to show an increase in the overall morbidity rate, and dental diseases are not an exception. The prevalence of caries in the adult population worldwide reaches 98%, while in young people this figure is 55-98% [9, 10]. Epidemiological dental examination of students with oral diseases is an pressing issue, as it enables to assess the level of dental health in planning preventive programs and forecasting the needs for dental care. Clinical examinations and polling included 140 undergraduate and postgraduate students aged 17-20 years who were enrolled to the Kyiv Municipal Student Polyclinic. According to our data, only 10% of students had intact teeth. Dental caries is diagnosed in 82% of cases. A non-carious process was observed in 13% of the students. Gum bleeding of varying intensity was observed in 67% of the students. The study showed that the students demonstrate a high prevalence and intensity of caries and non-carious lesions of the teeth. Almost all the students require sanation of the oral cavity. Prevention of dental diseases in educational institutions can significantly improve the level of hygienic knowledge of students and reduce the prevalence of caries, non-carious diseases and pathology of periodontal tissues.

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**HUMANITARIAN AND SOCIAL
PROBLEMS OF MEDICINE, TEACHING ISSUES
IN HIGHER MEDICAL SCHOOLS**

UDC 811.111

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**MEDICAL EPONYMS AS A SUBJECT OF CONTROVERSIES IN THE MODERN
TERMINOLOGY STUDIES**

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The article examines the phenomenon of eponymy in the modern English medical terminology. The major problematic aspects which may arise in the process of translation and usage of medical eponyms in oral and written speech have been considered. The advantages of eponymic names in medical terminology have been analyzed: these lexical units disclose the evolution of medical research and practice, provide continuity of scientific knowledge, as well as contribute to the formation of terminological competence of medical students. The phenomenon of eponymy in medical discourse has been studied through the lens of contemporary controversies (ethical, historical and gender aspects).

Key words: term, eponym, terminology system, medical discourse, gender.

Eponym (from Greek eponymos – “giving one’s name to something”) is the name of a disease, structure, operation, or procedure, usually derived from the name of the person who discovered or described it first [8]. The scientific efforts on structural systematization, etymological categorization and semantic classification of eponyms in different medical specialties are already numerous and well-developed [1; 2; 4; 12]. There are also researches devoted to ethical [14; 15], historical [9] and

gender [2] issues of medical eponyms. However, the comprehensive studies embracing and considering the entire spectrum of controversial aspects regarding the phenomenon of eponymy in medicine have not yet been undertaken until now. Thus, the novelty and relevance of the present research are obvious, since this paper will focus precisely upon all the debatable issues associated with medical eponyms, which have recently appeared in the world of science.

The aims of the research are to identify the main tendencies in the functioning of eponymic terms in the modern medical discourse; to assimilate and consider the potential difficulties and controversies which are associated with this linguistic phenomenon. The material of the study is the corpus of open access research papers, registered in the electronic database of medical publications "PubMed".

The undeniable advantages of eponymic names in medical terminology are quite obvious: eponyms are international, unambiguous, laconic and concise. Furthermore, eponyms (1) disclose the evolution of medical research and practice; (2) provide continuity of scientific knowledge and (3) contribute to the formation of terminological competence of medical students. It is beyond doubt that all these benefits render eponyms an essential part of medical terminology.

However, during the last decade, the use of eponyms has become the subject of intense controversy. In fact, some scholars [5; 11; 13] are convinced that the use of eponymous terms should be avoided, since they do not contain any practical information, and are only intended for immortalization of historical figures involved in the process of medicine development. "Anti-eponymists" argue that eponyms "lack accuracy, lead to confusion, and hamper scientific discussion in a globalised world" [15], and therefore should be replaced with descriptive equivalents that directly reflect the essential features of the concept. The exception is the names that long firmly penetrated the medical terminology and from which the derivative words are formed.

On the other hand, the group of "pro-eponymists" believes that the use of medical eponyms contributes to a deeper understanding of the evolution of clinical thinking and diagnostics, unveils the history of medicine development, and increases the intellectual level of the physician, because eponyms are part of history and culture. For instance, the adherents of eponymization assert that "eponyms serve as a means of honoring individuals who have made important discoveries and observations" [7]. The scholars argue that the undeniable value of eponyms consists in their "capability to encapsulate long and complex concepts very concisely" [5]. Pro-eponymists persist in the opinion that replacing and rebranding of eponyms will bring nothing but needless effort and "precisely the confusion which the scientific taxonomy aims to avoid" [13]. Therefore, such prevalent terms as Alzheimer's disease and many other existing eponyms cannot be virtually replaced "because they are too well entrenched and because there is no concise way of describing them scientifically" [13].

Taking into account all the above-listed advantages of eponyms, it is still necessary to consider a range of controversies which cannot be ignored. One of the most hotly debated topic, associated with the usage of eponymous terms, concerns eponyms related to the perpetrators of Nazi crimes (the groups of "tainted" eponyms due to unethical research practices of their inventors). As a matter of fact, until recently, medical discourse was replete with eponyms, named for individuals who are implicated in Nazi atrocities. However, nowadays the situation is steadily changing: there are active efforts to substitute these eponyms with descriptive equivalents. As a result, in the last decade there has been a dramatic decline in the usage of such eponyms [14; 15]. This tendency has been triggered by a recent series of incriminating researches on biographies of Nazi doctors (Declining

Use of the Eponym “Reiter’s syndrome” by Wu et al., 2005; Wegener’s Granulomatosis – Probing the Untold Past of the Man Behind the Eponym by Woywodt et al., 2006; Eponyms and the Nazi Era: Time to Remember and Time For Change by Strous et al., 2007; Tainted Eponyms in Medicine: the “Clara” Cell Joins the List by Woywodt et al., 2010 etc.). Thus, it is suggested to replace eponyms connected with the perpetrators of Nazi crimes as follows: Beck-Ibrahim disease → congenital cutaneous candidiasis; Cauchois-Eppinger-Frugoni syndrome → portal vein thrombosis; Clara cells → club cells; Hallervorden-Spatz disease → pantothenate kinase-associated neurodegeneration; Reiter’s syndrome → reactive arthritis; Seitelberger disease → infantile neuroaxonal dystrophy; Spatz-Stiefler reaction → paralysis agitans reaction; Van Bogaert-Scherer-Epstein syndrome → cerebrotendineous xanthomatosis; Wegener’s granulomatosis → granulomatosis with polyangiitis; Eppinger’s spider naevus → spider naevus; Reiter’s spirochete → *Trepemona forans*.

Moreover, eponyms may also give rise to other ethical issues. Sometimes eponyms may have “misleading racial connotations” and thus become “embarrassing terms”, as in case with “mongolism” (Down syndrome) which was abandoned by the World Health Organization in 1965 after a request from the Mongolian People’s Republic delegation [6].

Another important aspect of eponyms is the in-ventor’s gender. Although the frequency of eponyms with women’s names does not exceed 4% [2], it is essential to be aware of these terms, especially in order to avoid errors in Ukrainian and Russian. Hence, ignorance of eponyms named after women can lead to incorrect translation into Ukrainian or Russian (inadequate ending in Genitive case, which depends on gender in these languages). That is to say, students should be instructed that Epstein-Barr virus is translated as “вірус Епштейна-Барр” NOT “вірус Епштейна-Барра” (Yvonne Barr, 1932-2016, A PhD student of Michael Anthony Epstein); Apgar score – “шкала Апгар” NOT “шкала Апгара” (Virginia Apgar, 1909-1974, an American obstetrical anesthesiologist) and so on.

Furthermore, from the historical perspective, some eponyms are clear embodiments of sexism. For instance, a French neurologist Jean-Martin Charcot (1825-1893) studied the so-called “hysterogenic” zones across the female body (Charcot’s zones). For centuries, female hysteria was a medical diagnosis, reserved exclusively for women, and nowadays it is no longer recognized by medical authorities as a disorder. Consequently, the Charcot’s zones eponym has also lost its relevance.

Yet another important aspect of eponyms is the issues of spelling, in particular, the unsettled question of apostrophe use. Traditionally, the eponyms denoting diseases and pathological conditions were recorded as possessives (e.g., Crohn’s disease). However, over the past few decades, there has been a steady transition of the scientific community to omit the apostrophe and to eliminate the possessive case (Crohn disease). In 1975, the United States National Institutes of Health (NIH) held a conference to standardize the naming, and the conclusion was summarized in *Lancet* as follows: “The possessive use of an eponym should be discontinued, since the author neither had nor owned the disorder” [6]. It was agreed that writing eponyms without the apostrophe is feasible and reasonable due to its “linguistic simplicity and technical advantages” [10]. Nevertheless, this problem remains unresolved: despite the adoption of the “nonpossessive standard” more than 40 years ago, medical discourse still reveals the cases of using apostrophes in the eponymous names of diseases. Several authors [7; 10] have studied this situation and came to the conclusion that, despite a certain level of inconsistency, there is a gradual drift towards the nonpossessive form of such eponyms. It is necessary to bear in mind that the uniform use of clinical nomenclature is “vital for its identification and classification” [10]. At the same time, inconsistency of using the same eponyms

with and without apostrophes significantly “hampers retrieval of information from public databases” and therefore, the nonpossessive form should be used uniformly worldwide [10].

Another common error arises due to confusion with capitalization of such terms as “Southern blotting”, “northern blotting”, “western blotting” and “southwestern blotting”. The first blotting technique – Southern blotting, was discovered by Edward Southern, and therefore, this eponym is capitalized. Meanwhile, “northern blotting”, “western blotting” and “southwestern blotting” are not eponyms, but merely a play on eponymously-named Southern blot.

Another spelling problem may arise with similar sounding medical eponyms, for instance, Meigs’ syndrome (ovarian fibroma with ascites and pleural effusion) vs. Meige’s syndrome (blepharospasm with oromandibular dystonia) vs. Meige’s disease (lymphedema praecox); Meniere’s disease (cochlear hydrops) vs. Menetrier’s disease (hyperplastic hypersecretory gastrophyl); Wermer’s syndrome (multiple endocrine neoplasms, type 1) vs. Wer-ner’s syndrome (hereditary premature aging) and the like. Scholars argue that this incorrect use of medical eponyms “stems from the fact that the ep-onym does not include physiologically descriptive terms” [3].

Eponyms may also differ from country to country which may be quite challenging. As Robert P. Ferguson remarks: “There are no rules on eponym development. It may take an extraordinary period of time, be different in different languages and cultures, and evolve as more is known about the physician or the disease” [9]. For example: the condition, which is called Bazedov’s disease in most countries, is called Graves’ disease in the UK, and Flayani disease – in Italy [9].

Thus, eponyms are largely used in medical lan-guage, and their significance in medical discourse is undeniable. However, eponyms can be very tricky and confusing on a pragmatic level: they can be easily misspelled, erroneously used or misun-derstood. Hence, medical students should be in-structed as to the contemporary tendencies in using eponymous terms, namely: eradication of eponyms related to physicians who have committed crimes against humanity and have been involved in unethical actions [11]; potential errors which may arise when translating and writing medical eponyms; the peculiarities of using eponyms in different contexts, etc. The recent trends in the use of eponymous nomenclature reflect the fact that the contemporary medical community is flexible and open to changes. It is our belief that the phenomenon of eponymy in the English medical discourse requires further in-depth study, in terms of synchronous and diachronic aspects, in particular.

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Реферат

МЕДИЧНІ ЕПОНІМИ ЯК ПРЕДМЕТ ДИСКУСІЙ У СУЧАСНОМУ ТЕРМІНОЗНАВСТВІ

Лисанець Ю.В., Гаврильєва К.Г.

Ключові слова: термін, епонім, терміносистема, медичний дискурс, гендер.

У статті досліджено явище епонімії у сучасній англomовній медичній термінології. Розглянуто осно-вні проблемні аспекти у процесі перекладу та вживання медичних епонімів у писемному та усному мо-вленні. Проаналізовано переваги епонімічних найменувань, які розкривають еволюцію медичної науки і практики, забезпечують спадкоємність наукових знань, а також сприяють формуванню термінологічної компетенції студентів ВМНЗ. Явище

епонімії у медичному дискурсі досліджено крізь призму дискусійних питань сучасності (етичний, історичний, гендерний аспекти).

Реферат

МЕДИЦИНСКИЕ ЭПОНИМЫ КАК ПРЕДМЕТ ДИСКУССИЙ В СОВРЕМЕННОМ ТЕРМИНОВЕДЕНИИ

Лисанец Ю.В., Гаврильева К.Г.

Ключевые слова: термин, эпоним, терминосистема, медицинский дискурс, гендер.

В статье исследовано явление эпонимии в современной англоязычной медицинской терминологии. Рассмотрены основные проблемные аспекты в процессе перевода и употребления медицинских эпонимов в устной и письменной речи. Проанализированы преимущества эпонимических наименований, которые раскрывают эволюцию медицинской науки и практики, обеспечивают преемственность научных знаний, а также способствуют формированию терминологической компетенции студентов-медиков. Явление эпонимии в медицинском дискурсе исследовано сквозь призму дискуссионных вопросов современности (этический, исторический, гендерный аспекты).

ROLE OF FACULTY MENTORS IN GUIDING PROFESSIONAL ORIENTATION OF MEDICAL STUDENTS

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Key words: faculty mentors, professional competence, professional orientation, identification, pedagogical approach.

Up to date, the modern society is facing crucial internal transformation on the one hand, and global integration process, on the other hand. This means that each person needs not only adapt to the unstable situation and build own way of behaviour and self-determination in the social and cultural environment. This paper highlights the role of faculty mentors of higher medical educational institution in the development of the professional qualities of students. The pedagogical interaction between mentors and students is considered as a condition for starting the professional orientation, This research describes the approaches to identify the mentor's professional values and authority of creative and active personality as the basis for the further development of future doctors.

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ASSESSMENT OF NATURAL HUMAN POPULATION MIGRATION AND REPRODUCTIVE ACTIVITY IN SUMY REGION

Kalinichenko D. O.

Key words: birth rate, natural increase, reproductive age, demographic indicators, population, death rate.

The recent medical and demographic situation in Ukraine indicates an unsatisfactory state of health of the population, which is characterized by high rates of morbidity, low birth rate and high death rate. The purpose of the work: to investigate modern regional features of the natural movement of the population and to determine typological groups of districts by results of childbearing activity. Materials and methods Data from the All-Ukrainian Population Census, State Statistics Service of Ukraine were used for the analysis of demographic situation in Ukraine and Sumy region. Ranking of districts of Sumy region on indicators of a natural increase (reduction) of the population in 2014 - 2016 was carried out. Results. For the analysis of demographic changes in the region, we ranked a three-year increase in the population of each district centre. During the research we established districts with rather favourable, intense and crisis demographic situation. The three-year reduction of number of the existing population in Sumy region was mainly due to the rural population (-3, 13), rather than the population of urban settlements (-1, 09). It has been found out that in all the districts of the region there is a reduction of total number of the population, but the factors of demographic processes are different. Certain districts of the region have a similar picture of demographic changes that made it possible to distinguish four types of districts in the region according to the indicators of birth rate and mortality of the population. Demographic division into districts can serve as the basis for specific perspective medical and social measures for the identified regions.

Sumy region belongs to regions with a low indicator of average number of the children bearing rate by women at the age of 15 years and older that ranges from 2.0 to 2.1 children in comparison with the western regions of Ukraine, where average birth rate is more than 2.2 children. In the period of early reproductive age (20 - 24 years) of the women of Ukraine and Sumy region, the average number of the children born per 1 woman with the higher education makes 1.09 and 1.06 respectively. Among women of fertile age, both in cities and in villages, the most common is the reproductive policy on the birth of two children. The number of group of women who give birth to children outside of marriage is the highest at early reproductive age, which is often the result of undesirable pregnancy.

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INDEPENDENT WORK OF STUDENTS AT HIGHER MEDICAL EDUCATIONAL INSTITUTIONS AS BASIS FOR LEARNING AND RESEARCH ACTIVITIES AND PROFESSIONAL DEVELOPMENT OF FUTURE DOCTORS

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Key words: independent work, higher medical schools, professional activities.

The educational process in higher education involves a gradual and consistent mastery of students' knowledge at both theoretical and practical levels. Independent work is known as an indispensable part of learning because it leads to the gain of knowledge, development of skills and abilities, stimulates professional growth; gives rise to their creativity and initiative. The article deals with the concept of 'independent work' as well as specifies the peculiarities of independent work at higher educational institutions. There have been presented some strong reasons to promote and encourage an independent work as a type of educational activity aimed at developing cognitive abilities, continuing self-learning. The role of independent work in the professional development of future specialists has also been determined.

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ISSUES OF MEDICAL AND SOCIAL REHABILITATION OF ATO COMBATANTS WITH POST-TRAUMATIC STRESS DISORDER

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Key words: rehabilitation, post-traumatic stress disorder, ATO combatant.

Military operations in Eastern Ukraine result in overload of the healthcare settings: combat injuries and wounds, the progression of chronic diseases, complicated by psychological traumatic experience of military life lead to a progressive number of persons with disabilities and individuals requiring active rehabilitation. There are a growing number of patients with post-traumatic stress disorder. According to the Ministry of Defence of Ukraine in 2017, the status of combatants received about 150 thousand of military men, at that 80% of them are diagnosed to have psychological traumatic experience. Today, the increase in the number of ATO combatants having combat wounds determines the topicality of the organization and provision of medical, social and psychological rehabilitation of invalids with post-traumatic stress disorders (PTSD). This article aims at studying and ranking scientific medical and social approaches to rehabilitation of patients and disabled persons, and namely of ATO combatants with PTSD. The patient-centred program of rehabilitation of patients and disabled persons with a diagnosis of PTSD involves four directions, equal in their importance: medical, social, psychological and vocational rehabilitation. Therapeutic and prophylactic measures aim at morphological and functional recovery of significantly affected or temporarily lost functions of organs and systems of the patient by applying special treatment. In 2016, "Unified clinical Protocol of primary, secondary (specialized) and tertiary (highly specialized) medical care. Reaction to severe stress and adjustment disorders. Post-traumatic stress disorder." was developed and approved by MOH of Ukraine from 23.02.2016 No. 121. The document was developed with consideration for novel re-requirements of evidence-based medicine as well as peculiarities of the diagnosis and treatment of patients with PTSD in Ukraine from the standpoint of ensuring the sequence of steps of medical care. Issues on social rehabilitation are of great importance as they considerably influence the course of the treatment of PTSD and a number of underlying diseases. Recommendations on social rehabilitation of patients with PTSD involve the interaction between the patient and social services at his / her place of residence (individual and group psychotherapy). Recommendations on psychological rehabilitation are essential because the psychological assistance is a method contributed in the treatment of this disease. Recommendations for psychological rehabilitation include various types and forms of therapeutic work. Recommendations for vocational rehabilitation should include retraining or upgrading your skills to find a job that will suit their needs; searching for new positions; getting a new education. Anti-terrorist operations in the East of Ukraine and related migration processes cause a progressive increase in patients with PTSD, which require active psychological, social and medical rehabilitation. In such circumstances, the primary objective of physicians is to provide quality rehabilitation, medical and psychological assistance and recommendations concerning social protection of the sick and disabled ATO combatants with PTSD.

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MODERN MARKETING AND MANAGEMENT IN HEALTH CARE AND THEIR PROSPECTS

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Key words: health care, marketing, management, medical reforms, medical service.

The article presents the existing topical issues concerning the management of health care institutions. The current health care in Ukraine does not meet the needs of the society. This is due to the decrease in the level in the quality of medical education, being backward in the development of medical science and industry, etc. All these transformational processes in the healthcare sector raise the demand for knowledge and experience in the management of this system. The article analyzes the possibilities of applying marketing measures and tools in the field of healthcare of Ukraine, shows positive and negative consequences of using marketing events and future prospects.

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HEALTH CARE IN UKRAINE FROM PERSPECTIVE OF PATIENTS' RIGHTS

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Key words: health care, health care reform, patients' rights, family medicine, insurance medicine.

The article covers the urgent and disputable issues of reforming the health care system in Ukraine. The article also analyses the pressing problem of healthcare reforming, as well as particular aspects of insurance and family medicine introduction, challenges caused by violation of certain rights of patients, which are prescribed in legislation acts of Ukraine. There are examples of global experience in addressing the challenges faced by Ukraine in reforming the health care system.

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LITERATURE REVIEWS

MOLECULAR AND GENETIC MECHANISMS OF INDIVIDUAL STRESS-RESISTANCE

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Key words: stress, genes, epigenetics, stress resistance, microRNA, single nucleotide polymorphism.

The review provides current views on the issue of individual stress resistance. It has been shown that the determinant factors of susceptibility or resistance to stress are: of psychosocial nature, and in particular so-cial support and religion, neurobiological features of the individual, which are mainly genetically determined and epigenetic influences. Adrenergic, hypothalamic-pituitary-adrenal, serotonergic and dopaminergic sys-tems provide adaptation of the organism to unfavourable conditions of existence. Genetic factors that are largely responsible for variability of stress resistance include genetic predisposition (polymorphism of candidate genes of mental disorders and modulator genes), as well as intergenic interactions. Epigenetic processes are considered intermediate mechanisms, through which the negative effect of stress factors on the human genome is realized. Stress, especially in the early stages of the development of the body, modulates the activity of stress-limiting systems of the body that can lead to mental disorders. A special attention is paid to microRNAs considering them as potential biological non-invasive markers and therapeutic targets at the same time. Understanding the molecular genetic traits that underlie stress resistance will be an important step in improving the diagnosis, prevention and treatment of stress disorders.

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PATHOGENETIC BASES FOR MEDICAL CORRECTION OF METABOLIC STATUS INDICATORS IN PATIENTS WITH COMORBIDITY OF ESSENTIAL HYPERTENSION AND NON-ALCOHOLIC FATTY LIVER DISEASE

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Key words: hypertension, nonalcoholic fatty liver disease, treatment.

Searching for up-to-date effective approaches in the treatment of comorbidity of essential hypertension and non-alcoholic fatty liver disease involves not only precise blood pressure monitoring, but investigating methods for liver pathology correction. Such antihypertensive drugs as angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers have their own anti-fibrotic effects. They are able to slow down the progression of nonalcoholic fatty liver disease and at the same time improve the morphological state of the heart and blood vessels in hypertensive patients. Unfortunately, the issue on applying statins, especially in their maximum dose, in patients with high blood pressure and comorbid liver pathology is still disputable. One of the newest directions of the therapy is the combination of statins and cardioprotectors. Meltedonium is considered as the optimal preparation in this group, which along with cardioprotection action has an additional pronounced effect on lipid metabolism indices (reduces the level of proatherogenic lipoproteins), carbohydrate (reduces insulin resistance) and lipid (increases the adiponectin level) metabolism. The integrated application of statins and hepatoprotectors including an ursodeoxycholic acid, deserves particular attention as well. This drug has antioxidant, anti-inflammatory, cytoprotective, anti-cholestatic, immune protective and additional hypocholesterolemic properties, reducing overall cardiovascular risk in patients with hypertension and non-alcoholic fatty liver disease. Up to date, there is no clear understanding of lipoprotein (a) role in pathogenesis of comorbidity of hypertension and hepatic pathology. Today lipoprotein (a) is considered as a hereditary factor of increased cardiovascular risk and one, which resists to medical correction. The researches of the newest methods for lipoprotein (a) serum level correction with statin drugs, mipomersen, inhibitors of proprotein convertase subtilisin/kexin type 9, inhibitors of protein transporters of cholesterol, eprotirom are now under meticulous study. Taking into account the important role of activation of nonspecific systemic inflammation processes and carbohydrate metabolism disorders with subsequent insulin resistance for the formation of hypertension and non-alcoholic fatty liver disease, additional possible directions of their integrated therapy include anti-inflammatory drugs (including elefibranone) and correction of elevated serum insulin level by thiazolidinediones. However, despite the fundamental discoveries in cardiology and hepatology, many aspects of the treatment and prevention of hypertension and concomitant non-alcoholic fatty liver disease require further research to substantiate theoretical results.

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TOXOCARIASIS: MODERN ASPECTS OF ISSUE

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Key words: Toxocariasis, Toxocara canis, helminth invasion.

This review elucidates and summarizes the available data on the incidence of toxocariasis, its aetiology, epidemiology, pathogenesis, laboratory diagnostics, clinical course and treatment. Toxocariasis is a zoonotic parasitic disease characterized by ingression of nematode larvae of domestic carnivores (roundworms), toxocara, their migration and harmful vital activity in the human body with possible damage to various internal organs and systems. The pathological process can affect various organs, and organ pathology is characterized by a large variety of symptoms that requires choosing the proper option of diagnostic approaches and therapeutic tactics. The risk groups include: 1) age, especially children of 3-10 years who contact with soil; 2) occupation, e.g., veterinarians and animal nursery workers, car drivers, car mechanics (due to contact with soil elements when servicing cars), communal service workers, sellers of vegetable stores; 3) behavioural peculiarities, i.e. mentally retarded and mentally ill individuals with habit of geophagia and low level of hygienic skills, as well as mentally normal people with a habit of geophagia; 4) others – owners of household plots, kitchen gardens, persons engaged in hunting with dogs, pet owners. A number of studies show a social association with toxocariasis, which is the most often found among people with low socioeconomic status. The fall in the overall standard of living in our country has led to the fact that the absolute majority of residents have not adequate information not only about toxocariasis, but also about the risk of zoonotic invasions in general. Therefore, it is

difficult to rely upon people's conscious behaviour and compliance with hygiene standards and rules that contributes to the prevention of infection, so the most important task is health education of the population. On the other hand, family doctors and other professionals should be more careful in assessing the health status of patients, especially in cases with pronounced polymorphism of clinical manifestations.

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RELATIONSHIP BETWEEN BRAIN AND INTESTINAL MICROBIOTA IN NORMAL CONDITIONS AND IN MODELLED PATHOLOGY (LITERATURE REVIEW)

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Key words: intestinal microbiota, brain.

This literature review is devoted to the analysis and generalizing of available data on the influence of intestinal microbiota and probiotics on the postnatal developmental pathways of the brain, its functioning throughout life, the neuropsychological state of the organism, stress reactivity, cognitive functions, and the development of various pathological states of the central nervous system.

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VIEW ON THE PROBLEM

BARRETT'S ESOPHAGUS: CURRENT STATUS OF ISSUE

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Key words: Barrett's oesophagus, cylindrical metaplasia, intraepithelial neoplasia, endoscopic diagnosis, morphological study.

Barrett's oesophagus, a condition whereby native squamous epithelial lining of the lower oesophagus is replaced by columnar epithelium, is typically associated with the development of oesophageal adenocarci-noma. This article highlights the issues on the pathogenesis of Barrett's esophagus and possible mecha-nisms of carcinogenesis of columnar epithelium; describes the up-to-date endoscopic diagnostic techniques of Barrett's esophagus as light video endoscopy, high-resolution, high magnifying, narrow band imaging and chromoendoscopy. The role of biopsy and

the results of morphological research in the diagnosis of Barrett's oesophagus have been discussed as well. There are following morphological types metaplasia in Barrett's esophagus as fundal, cardial and intestinal metaplasia, as well as morphological signs of intraepithelial neoplasia (dysplasia) of low and high degree. Depending on the type of metaplasia and the presence of dysplasia of the epithelium, the main points of the management of patients with Barrett's oesophagus have been lined out.

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