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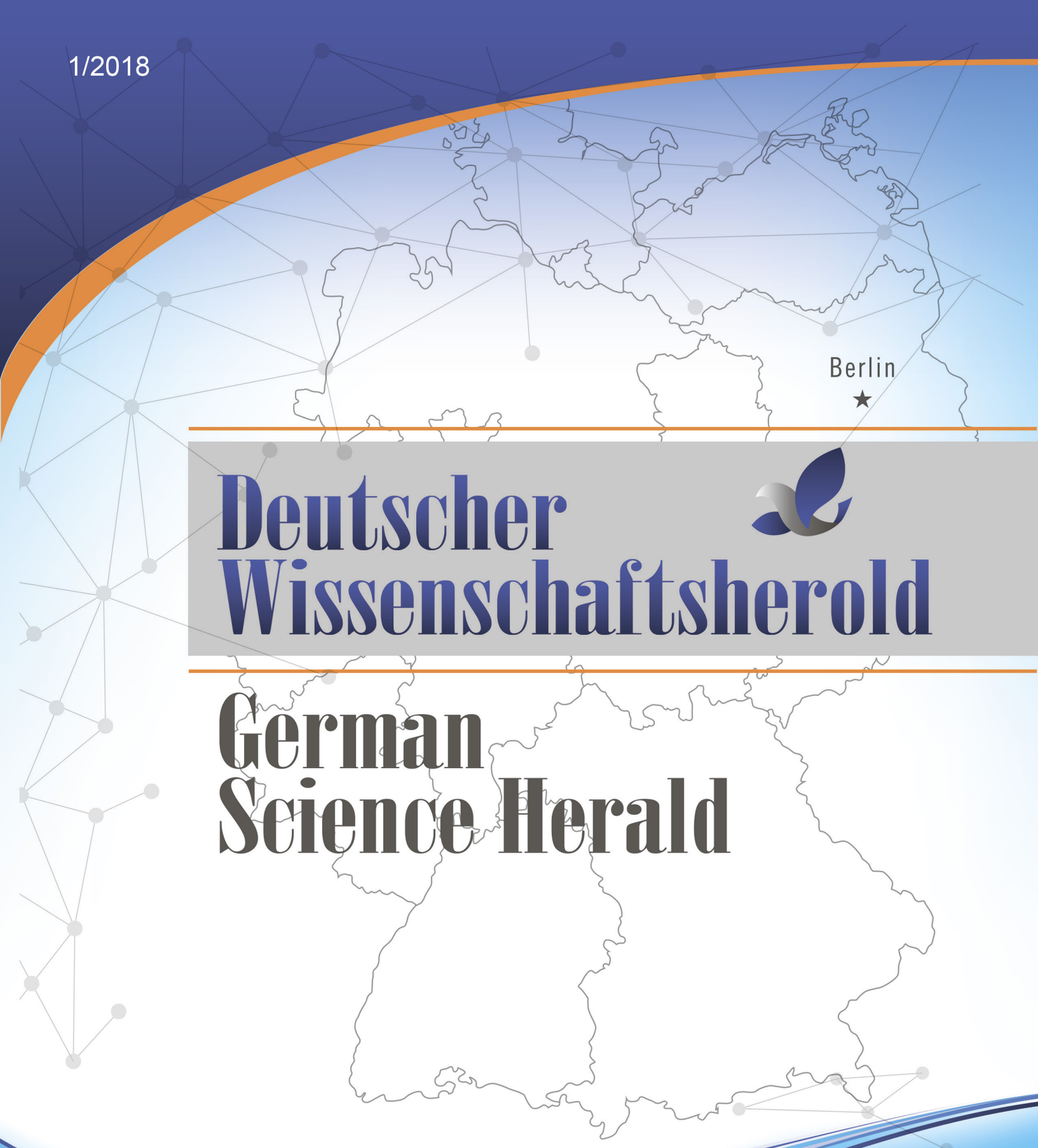

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EVOLUTION OF THE APPROACHES TO ARTERIAL CANNULATION IN OPERATIONS FOR ACUTE TYPE A AORTIC DISSECTION

Abstract. *The acute aortic dissection is the most serious life threatening condition of all pathological processes that impair the thoracic aorta. Earlier operations of choice for the type A acute aortic dissection (AAD) were the classical Bentall dé Bono operation with Cabroll's anastomosis and the supracoronary replacement of the ascending aorta. Nowadays much more sophisticated techniques of surgical interventions on the ascending aorta, aortic arch, aortic roots, coronary arteries, and the aortic valve proper are developed and introduced into clinical practice. The question of choosing an optimal method for surgical treatment of various anatomical variants of the AAD and arterial cannulation to provide antegrade perfusion of the true lumen remains to be debatable and topical. 154 operations for AAD were performed in Lviv Cardiovascular Surgery Center in the period from 2010 to 2017. For arterial cannulation to connect extracorporeal circulation different sites such as superficial femoral artery, aortic arch, ascending aorta, left common carotid artery, brachiocephalic trunk or cannulation of the true lumen of aorta were used. The optimal cannulation site in operation for AAD should be chosen according to patient's status. In really emergencies, especially in ongoing rupture of ascending aorta, direct true lumen cannulation is quick and safe method. Every approach for AAD was associated with an acceptable mortality rate. Theoretically, no cannulation technique can completely avoid the risk of a malperfusion vascular event.*

Key words: *type A acute aortic dissection, arterial cannulation, perfusion of true lumen.*

Introduction. The acute aortic dissection occurs in 30% of cases of all pathological processes that impair the thoracic aorta and is the most serious life threatening condition. Without surgery 33% of patients in this category die within the first 24 hours and 50% of such patients die within 48 hours [1].

Only 5-7 years ago operations of choice for the type A acute aortic dissection (AAD) were the classical Bentall dé Bono operation with Cabroll's anastomosis and the supracoronary replacement of the ascending aorta (inclusion method) [2]. The expansion of knowledge of the aortic root surgical anatomy, appearance of the new AAD classification, availability of modern non-penetrating vascular and valve prostheses inspired surgeons to develop and introduce into clinical practice much more sophisticated techniques of surgical interventions on the ascending aorta, aortic arch, aortic roots, coronary arteries, and the aortic valve proper. These operations were performed mainly with the use of deep hypothermia (18±C) and applying distal anastomosis under a complete circulatory arrest. The use of this technique threatens the onset of ischemic complications on the part of the brain and the ischemic impairment of the vital organs [3]. Besides, already at the stage of perfusion with the aid of the extracorporeal circulation there may occur a hypoperfusion or ischemia of vital organs in case of perfusion of a false lumen.

It should be noted, that one of the most extensive studies in Europe, GERRADA conducted to study the results of AAD treatment of 1500 cases, established that in case of surgery for AAD there can be applied every technique, for the main thing at that time is to save the patient's life [4]. This is why the question of choosing an optimal method for surgical treatment of various anatomical variants of the AAD and arterial cannulation to provide antegrade perfusion of the

true lumen remains to be debatable and topical.

Objective: to evaluate the safety and efficacy of different cannulation sites of the dissected ascending aorta in acute type A dissection.

Material and methods. 154 operations for AAD were performed in Lviv Cardiovascular Surgery Center in the period from 2010 to 2017. The patients were represented by 85 males and 69 females aged from 31 to 72, average age 53±19 years. Applying NYHA classification we attributed 11 patients to the functional class II, 111 patients to the functional class III, and the remaining 32 patients were attributed to NYHA class IV.

In 43 cases the superficial femoral artery (right or left) was used for arterial cannulation to connect extracorporeal circulation with cannulation performed mainly not only in the central end of the artery, but in the peripheral as we well – in order to avoid a prolonged ischemia of the lower extremity. In 12 cases the aortic arch was used for cannulation with pre assessment indicating no dissection of the aortic arch. Cannulation was performed directly of the ascending aorta for 13 patients applying the Seldinger method using the EOP Medtronic arterial cannula without the preliminary purse-string suturing in cases of hemodynamically unstable patients [5]. In cases of doubt cannulation of the true lumen was made using transepicardial echocardiography. For 16 patients the left common carotid artery was used for the arterial connection, and the brachiocephalic trunk was used in 8 more cases. In all of these cases the method of end-to-side anastomosis was applied between the vascular prosthesis Vascutec 8-10 mm and the corresponding arteries. Then aortic cannula 18-20 Fr was implanted into the vascular prosthesis. Cannulation of the true lumen of aorta was used in 62 cases under the visual control. To accomplish that, the left atrial appendage was cannulated first, then 500 to 1000 ml of blood was taken into the coronary reservoir of the artificial blood circulation apparatus, thus achieving a controlled hypotension. Then the ascending aorta separately or together with the pulmonary artery were bypassed applying a tourniquet to the given tissular strips and with the passive desanguination of the patient in the Trendelenburg's position through the venous line, at first the false, and then the true lumen of the aorta were dissected, following which a cannula was inserted in the true lumen under the visual control with the controlled blood supply through the arterial line, gradually achieving the rated efficacy of the extracorporeal circulation. Japanese authors call this method the "Samurai technique". Then tourniquets were placed around the cannula. The axillary artery was not used to connect the bloodstream.

Duplex scanning of the aortic arch branches, femoral arteries was made on all patients at the preoperative stage to verify dissection of these vessels as well as the presence of hemodynamically significant stenosis, for the possibility of using the best vessel for the arterial cannulation. On 149 patients operations were performed under the conditions of the complete arrest of circulation and a deep hypothermia 180C for the placement of the "open" distal anastomosis. Replacement of the ascending aorta of the other 5 patients, the was performed with cross-clamping of the aorta under a moderate total body hypothermia. Aside from the deep hypothermia to protect the brain antegrade cerebral perfusion was done on 67 patients. 2 different methods of the brain protection were used for 149 patients with deep hypothermia: for 67 patients – selective antegrade cerebral perfusion (SACP), and for 82 patients – deep hypothermia. Mean time of circulatory arrest was 31±17 minutes. Mean time of selective cerebral perfusion was 25±9 minutes. Operations that were performed: Supracoronary replacement of the ascending segment of the aorta – 77; Supracoronary replacement of the ascending segment of the aorta and resuspension of the aortic valve – 15; Supracoronary replacement of the ascending segment of the aorta + hemiarch aortic replacement – 30; Bentall operation applying full root button technique – 25; David E. operation – 7.

Results of the study. Arterial cannulation in the main artery to ensure blood-flow in the true lumen gives the surgeon confidence and peace of mind to provide an adequate perfusion of the vital organs till the moment of complete stoppage of extracorporeal circulation under the deep hypothermia. In the case of a hemodynamically unstable patient or an intraoperative rupture of the aorta it is advisable to cannulate immediately the ascending aorta applying Seldinger method, while it does not always matter whether to use the true or false lumens. In such cases, it is worthwhile to immediately cool the patient to deep hypothermia without clamping the aorta and begin reconstruction of the aorta from the distal anastomosis. In case of stabilization of the

situation, it is possible to use the intraoperative transoesophageal or transepicardial echocardiography to verify position of the cannula. In stable situations, as well as in cases of non-extension of dissection to the aortic arch branches and in case of absence of separate atherosclerotic lesions of the carotid arteries, it is possible to use appropriate vessels for the arterial connection. The advantage of this method of arterial cannulation is perfusion in the true lumen with the simultaneous use of this vascular access for the antegrade cerebral perfusion to protect the brain. A certain disadvantage of this technique is always a somewhat prolonged time of the operation for exposing this artery and placement an appropriate anastomosis with the vascular prosthesis, as well as manipulations with the carotid arteries, that in the event of a surgical error may lead to neurological complications. As to the femoral cannulation, this method continues to be the method of choice for such type of operations. We would only note, that we continue to use on a wider scale cannulation of the femoral artery in its central and peripheral segments. In 2016 and 2017 we performed 80% of the operations for acute aortic dissection using central cannulation of the true aortic lumen applying the "Samurai technique" [6], observing the principle proposed by J. Bavaria "All in chest" [7]. Our observations in the course of applying this method show that practically with each variant of aortic dissection we manage to ensure an adequate antegrade blood-flow, and if not eliminate, to reduce considerably malperfusions of internal organs and, besides, this technique is practically indispensable in case of an intraoperative rupture of the aorta.

Discussion. Nowadays much more sophisticated techniques of surgical interventions on the ascending aorta, aortic arch, aortic roots, coronary arteries, and the aortic valve proper are developed and introduced into clinical practice. The question of choosing an optimal method for surgical treatment of various anatomical variants of the AAD and arterial cannulation to provide antegrade perfusion of the true lumen remains to be debatable and topical. But the key point is to provide an adequate perfusion of the vital organs.

Conclusions. The optimal cannulation site for the repair of AAD should be chosen according to patient's status. When choosing the method of arterial cannulation in operations for acute aortic dissection one should follow the principle of antegrade perfusion in the true lumen. The use of carotid arteries for the arterial connection of extracorporeal circulation in most cases provides the opportunity to ensure antegrade blood-flow with simultaneous use of that vascular access for protection of the brain. The use of central cannulation in the true lumen of the type A acute aortic dissection observing the principle "all in chest" provides the opportunity to ensure a sufficiently reliable blood-flow in the internal organs and is suitable for the widest range of variants of surgical treatment.

Prospects for further research. Presented results of the study are a part of the scientific-research work dealing with investigation of the different sites of arterial cannulation in operations for acute type a aortic dissection. The results obtained in the study can be used to search and analyze the beat site of arterial cannulation to ensure an adequate antegrade blood-flow and to reduce considerably malperfusions of internal organs.

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INVESTIGATION OF A HYPOGLYCEMIC ACTION OF EXTRACTS MADE OF TARAXACUM OFFICINALE ROOTS AND RHIZOMES

Abstract. *sugar-reducing action of the extract made of Taraxacum officinale roots and rhizomes in the dose of 0,1 g/kg in case of a single administration against the ground of glucose tolerance test is studied. The extract of Taraxacum officinale is found to possess 60% as much pronounced hypoglycemic action of the extraction agent in comparison with other extracts of Taraxacum officinale and the medicinal herbal tea "Arphasetin", registered and permitted to be used in Ukraine. It enables to study its pharmacological properties further in order to use it in practical medicine as a sugar-reducing means.*
Key words: *Taraxacum officinale, extrcat, glucose tolerance test, sugar-reducing action.*

Introduction. In spite of a progressive development of medicine diabetes mellitus (DM) remains one of the social-medical issues both in Ukraine and in the majority of the world countries. The pathology occupies the third position in the structure of mortality after cardio-vascular and oncological ones with its annual growth to 3% [8].

During 13 years in Ukraine the pathology has increased to 54,5 %, and sickness rate — to 82 %. According to the WHO prognosis the number of patients suffering from DM will be 592 million of people in the following 20 years, that is 55% increase [1, 4].

Oral sugar-reducing drugs that are mainly synthetic in nature are number one choice for patients with type 2 DM. Although all these drugs produce good therapeutic action, they cause a lot of side effects and are expensive at the same time [5].

Therefore, the investigations are directed to search and find new oral drugs possessing good therapeutic effect and less side effects.

In recent years the range of scientific search for new medicinal herbal means, their examination and introduction into official medicine has become wider. Advantages of medicinal herbal agents are the following: they are less toxic, possess mild action, are not accumulated, can be used for a long time in combination with other medicinal herbal preparations and chemotherapy; they can be indicated for patients of any age irrespective of DM severity; they are cheaper as compared to synthetic means [2]. One of such plants is *Taraxacum officinale*, and its roots and rhizomes are used as raw materials.

Objective: to study pharmacological properties of the extract made of the roots and rhizomes of *Taraxacum officinale* in order to determine possible hypoglycemic action under conditions of glucose tolerance test by means of single intraperitoneal introduction of glucose.

Materials and methods. The extracts of roots and rhizomes of *Taraxacum officinale* were used for the study. To obtain the extract of roots and rhizomes of *Taraxacum officinale* the medicinal raw material was drawn on 10%, 20%, 30%, 40%, 50%, 60%, 70, 80%, 90%, 96% ethyl alcohol.

A daily therapeutic dose of extracts for the man is 0,02 - 0,04 g/kg [3]. Applying Yu.R. Rybolovliev's specific sensitivity coefficients and his method of dose calculation for the man to the dose for a rat: 0,02 g/kg / 0,45 =X g/kg/1,89, we have determined that conditional therapeutic dose for a rat is 0,08 - 0,2 g/kg [7]. The dose taken for the experiment was 0,1 g/kg.

The only medicinal herbal preparation with evidenced sugar-reducing activity registered and permitted in Ukraine "Arphasetin" was used as a drug of comparison (the producer – Ltd "Liktravy", Zhytomyr) in the form of tincture in the dose of 24

ml/kg [9].

The value of the dose of the medicinal herbal tea "Arphasetin" for rats 24 ml/kg is determined for tinctures, and on the basis of the instruction for use the specific sensitivity coefficient and the method or therapeutic dose calculation for the man per dose for a rat was made according to Yu.R. Rybolovliev (therapeutic dose of the tincture for the man with an average body weight 70 kg is 300–400 ml/70 kg=5,7ml/kg daily followed by: 5,7/0,45=X/1,89=24 ml/kg) [7].

Hypoglycemic action of *Taraxacum officinale* extracts in comparison with the infusion "Arphasetin" in case of their single administration was studied on the pattern of acute hyperglycemia in rats with the body weight 180-220 g (7 animals in each group), caused by intraperitoneal introduction of glucose in the dose of 3g/kg.

The experimental animals were distributed in the following way: 1 group of animals with simulated pathology, the following groups of animals received the extracts of *Taraxacum officinale*: 2 group – on 10 % extraction agent, 3 group - on 20 % extraction agent, 4 group - on 30 % extraction agent, 5 group - on 40 % extraction agent, 6 group - on 50 % extraction agent, 7 group - on 60 % extraction agent, 8 group - on 70 % extraction agent, 9 group - нона 80 % extraction agent, 10 group - on 90 % extraction agent, 11 group - on 96 % extraction agent, 12 group of animals received the drug of comparison (infusion of "Arphasetin" medicinal herbal tea).

Blood was taken from the caudal vein of all the animals to determine the initial level of glucose. After that the experimental groups (from 2 to 11) were exposed to intraperitoneal introduction of the examined extracts on 1% starch glue in the dose of 0,1 g/kg, infusion of the herbal medicinal tea "Arphasetin" (12 group) in the dose of 24 ml/kg, the control group was intraperitoneally introduced to an equivalent amount of drinking water. Glucose solution was introduced to all the animals 1 hour later in the dose of 3 g/kg. Then 15 minutes later blood was taken from the caudal vein of all the animals. Glucose concentration in the blood was determined by means of glucose oxidase method with the set of reagents produced by the firm "Filicit-Diagnostics" [6].

Results. Intraperitoneal introduction of glucose in the dose of 3 g/kg resulted in the development of acute hyperglycemia manifested by reliable increase of glucose level in all the groups of animals compared to the initial data (Table 1).

Thus, glucose level in the blood of animals receiving glucose tolerance test was 2,28 times higher than that of the simulated pathology. In animals receiving extracts glucose level was in an average 1,7 times as much as initial data (thus, in

Table 1

Effect of single introduction of the extracts of *Taraxacum officinale* roots and rhizomes on glucose level in the blood of rats with normal glycemic level under condition of glucose tolerance test

Groups of animals		Initial glucose level	15 minutes later after simulating pathology	Hypoglycemic action
		C, mmol/L	C, mmol/L	%
1.	Control (glucose)	4,40±0,12	10,01±0,37*	
2.	10% extract + glucose	4,17±0,27	7,70±0,36*#	23,08
3.	20% extract + glucose	4,34±0,16	7,04±0,58*#*	29,67
4.	30% extract + glucose	4,33±0,28	6,90±0,32*#*	31,07
5.	40% extract + glucose	3,94±0,14	6,94±0,25*#*	30,67
6.	50% extract + glucose	4,57±0,28	7,57±0,37*#*	24,38
7.	60% extract + glucose	3,79±0,24	5,63±0,51*#*	43,76
8.	70% extract + glucose	3,11±0,14	6,06±0,24*#*	39,46
9.	80% extract + glucose	3,53±0,26	6,26±0,55*#*	37,46
10.	90% extract + glucose	4,30±0,24	8,0±0,49*#	20,08
11.	96% extract + glucose	4,10±0,12	7,79±0,37*#	22,18
12.	Medicinal herbal tea "Arphasetin" + glucose	4,14±0,27	8,56±0,36*#	14,49

Notes: * - p<0,05 in comparison with initial data;

- p<0,05 in comparison with simulated pathology;

* - p<0,05 in comparison with medicinal herbal tea "Arphasetin".

in case of introduction of the extract on 10% extraction agent glucose level was 1,85 times as much, on 20% - 1,62 times, 30% - 1,59 times, 40% - 1,76 times, 50% - 1,66 times, 60% - 1,49 times, 70% - 1,95 times, 80% - 1,77 times, 90% - 1,86 times, 96% - 1,9 times respectively). At the same time, the smallest difference was found in the group of animals which received the extract of *Taraxacum officinale* obtained on 60% ethyl alcohol (1,49 times as much). With the use of "Arphasetin" as a preparation of comparison glucose level was 2,07 times as much as the initial level.

Under the influence of a single administration of *Taraxacum officinale* extracts in the dose of 0,1 g/kg glucose level in the blood in comparison with the control pathology 1, 45b times decreased; the findings were analogically reliable with the use of all the concentrations of *Taraxacum officinale* extracts (thus, in case of introduction of the extract on 10% extraction agent glucose level was 1,3 times less, on 20% - 1,42 times, 30% - 1,45 times, 40% - 1,44 times, 50% - 1,32 times, 60% - 1,78 times, 70% - 1,65 times, 80% - 1,6 times, 90% - 1,25 times, 96% - 1,28 times respectively). The best result was obtained with the use of *Taraxacum officinale* extract on 60% extraction agent which reduced glucose level in 1,78 times compared to the pathology. With the use of "Arphasetin" (the preparation of the study) glucose level decreased in 1.17 times compared with untreated animals.

Discussion. It should be noted that sugar-reducing activity of the medicinal herbal tea "Arphasetin" (14,49 %) in case of a single introduction in the dose of 24 ml/kg is 5,59% less than the smallest index of the examined preparation - *Taraxacum officinale* extract on 96 % extraction agent (20,08 %).

By the findings of the experiment sugar-reducing activity of *Taraxacum officinale* extract on 60% extraction agent is 43,76 % 15 minutes after glucose introduction, which is in 3,02 times more than the reference drug "Arphasetin".

A comparative analysis of sugar-reducing action of the examined preparations enables to conclude that *Taraxacum officinale* extract possesses a considerable hypoglycemic activity in case of a single introduction in the dose of 0,1 g/kg in comparison with the simulated pathology and reference herbal medicinal tea "Arphasetin".

It should be noted that 60% *Taraxacum officinale* extract possesses the highest sugar-reducing properties than other extracts and the drug of comparison respectively.

Conclusions: 1. Hypoglycemic action of alcohol *Taraxacum officinale* extract in case of a single introduction against the ground of glucose tolerance test is evidenced.

2. 60% *Taraxacum officinale* extract possesses the highest sugar-reducing properties than other extracts and the drug of comparison "Arphasetin" registered and permitted in Ukraine.

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PECULIARITIES OF SYNTROPIC FUNCTIONAL DISORDERS OF THE DIGESTIVE SYSTEM AGAINST THE GROUND OF CONNECTIVE TISSUE DYSPLASIA

Abstract. *A considerable occurrence of functional gastrointestinal disorders (FGID) in childhood, their frequent combination between themselves, the risk of transformation into organic pathology together with high collagen content in the digestive organs require investigation of pathophysiological relations of the pathology with collagen dysfunction. Objective of the study is to investigate the role of collagen disorders in FGID pathophysiology and assess their effect on clinical development of irritable bowel syndrome. 63 children suffering from FGID have been examined. Irritable bowel syndrome was diagnosed as a leading functional disorder of all the children examined. Syntropic functional biliary disorders were found in (38,46±6,13) % patients. By the results of molecular-genetic examination genetic polymorphism of COL3A1 rs1800255 with prevailing the genotype G/A – 47,62 % (95 % CI 35,04 – 60,2) was determined, that was most reliably found (p = 0,008) in children with syntropic functional biliary disorders and was associated with a wide range of comorbid pathology (p = 0,002) and pronounced dysplastic signs (p = 0,034).*

Key words: *children, functional gastrointestinal disorders, irritable bowel syndrome, connective tissue dysplasia, collagen of III type (COL3A1), syntropic pathology.*

Introduction. Nowadays functional gastrointestinal disorders (FGID) are considered as the most spread pathology of the gastrointestinal tract (GIT) in childhood, with morphological and physiological disorders in its base associated with visceral hypersensitivity, motor disorders of the gastrointestinal tract, protective mucous barrier, immune function and intestinal microbiota content, as well as disorders of the central nervous system. The last version of the document “Roman Criteria IV” (2016) defines FGID as disorders of gut-brain interaction [2].

“Roman Criteria IV” officially recognized overlap syndrome, that is possible availability of several functional disorders at the same time and transition of one form into another one, for example, combination of irritable bowel syndrome with functional dyspepsia [2].

Today irritable bowel syndrome (IBS) is considered to be the most spread and examined pathology among FGID as a standard for understanding pathogenic essence of FGID. Synthesis disorders of the cerebral and intestinal peptides, genetic susceptibility to pro-inflammatory response, increased permeability of the intestinal epithelial barrier, excessive receptor sensitivity of the mucous membrane, changes from the side of immune reactivity and intestinal microbiota make pathophysiological morphological and biochemical basis promoting development of IBS signs [1, 3, 6].

The role of collagen dysfunction in pathogenesis of syntropic diseases of the digestive system and FGID in particular is not studied adequately. Considering high collagen content in the organs of the gastrointestinal tract, the effect of connective tissue dysplasia on the development of digestive pathology has become of an important value. Connective tissue dysplasia is known to cause structural abnormalities of the internal organs, motor disorders and changes of functional possibilities, which together with circulatory peculiarities result in inadequate reparative mechanisms and synchronization of

inflammatory processes in the body [4].

Objective: to investigate the role of collagen disorders in FGID pathophysiology and assess their effect on clinical development of irritable bowel syndrome.

Materials and methods. 63 children at the age from 2,5 to 16 years were examined (an average age – 8,9±4,5 years), including 36 girls and 27 boys. Insertion criteria were age of children from 1 to 18 years and diagnosed FGID. Exclusion criteria were the age under 1 year, anxiety signs available ("red flags"), congenital or acquired immunodeficiency conditions.

In addition to general clinical examinations certain phenotype signs were determined in all the children, the degree of connective tissue dysplasia was assessed in the total sum of score by means of the diagnostic criteria suggested by L.M. Abbakumova et al. (2006). According to these criteria the mild degree of connective tissue dysplasia is no more than 12, moderate degree – no more than 23, severe degree – 24 and more.

At the same time molecular-genetic examination was performed with determination of gene polymorphism of collagen III alpha 1 type (COL3A1) rs1800255 in the cells of the buccal epithelium of the patients examined. The concentration and purity of DNA specimen were determined on the spectrophotometer (Nanophotometr, Implen). Polymorphism of COL3A1 rs1800255 2092G>A was assessed by means of polymerase chain reaction method – polymorphism of restriction fragments length (PCR-PRFL). Genotyping of COL3A1 polymorphism in the nucleotide position – 2092 was performed with the use of primers: direct F GCC CCA GGA CTT AGA GGT G and reverse R CCT TGC AGA CCA GGA GT (Ltd «Synthol», Russia).

The results obtained were statistically processed by means of Windows XP applying the licensed software Microsoft Excel XP. The following indices were calculated: arithmetic mean value, arithmetic mean standard error, representative relative value error, Pearson χ^2 criterion, Yates correction, odds ratio (OR), 95 confidential interval (CI). Reliability of results was considered to be determined in case its probability was no less than 95 % ($p < 0,05$).

Results. Certain age peculiarities were determined by the results of the study. The 1st junior age group appeared to be have the least number of children (12,7±4,2) % out of all the examined ones. All the following age periods were characterized by an increased number of patients with maximum in the senior group (36,5±6,1) %, which is practically three times as much as the juniors. It must be explained by a number of negative factors at older age, including feeding disorders, excessive psychophysical exertion, reduced parental control, appearance of bad habits etc. There were more girls among the examined patients (57,14±6,23) % than boys (42,86±6,23) %, $p>0,05$, which is demonstrated on the diagram below.

Diagnosis of FGID in the examined patients was made according to Roman Criteria IV, which define irritable bowel syndrome (IBS) as a leading functional disorders of all the patients. Clinical variant of IBS with prevailing constipation was diagnosed in the majority of patients (76,92 %),

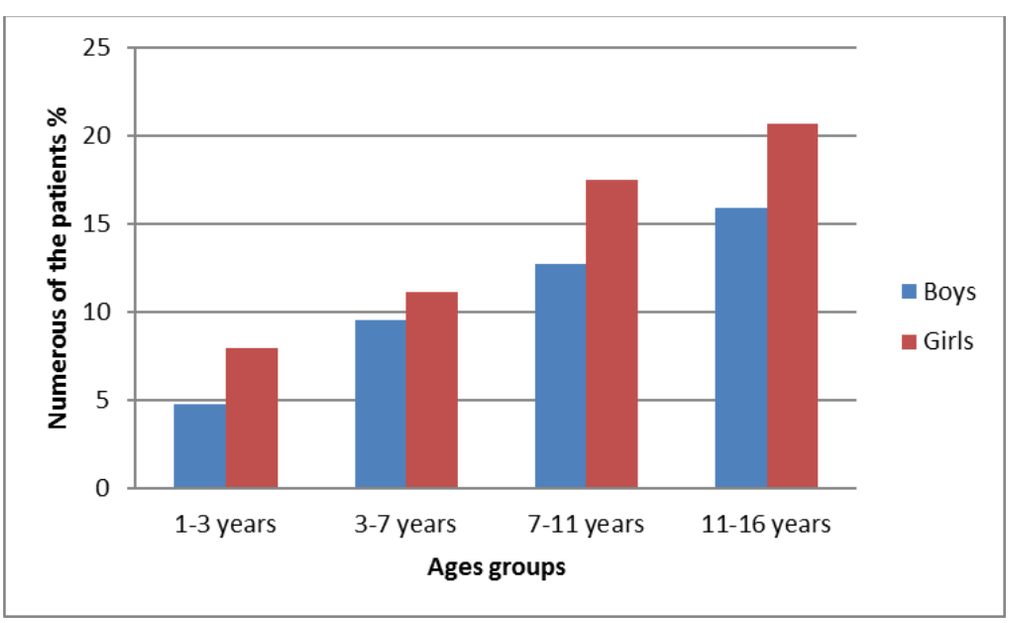


Fig. 1. Distribution of the examined children by gender content and age

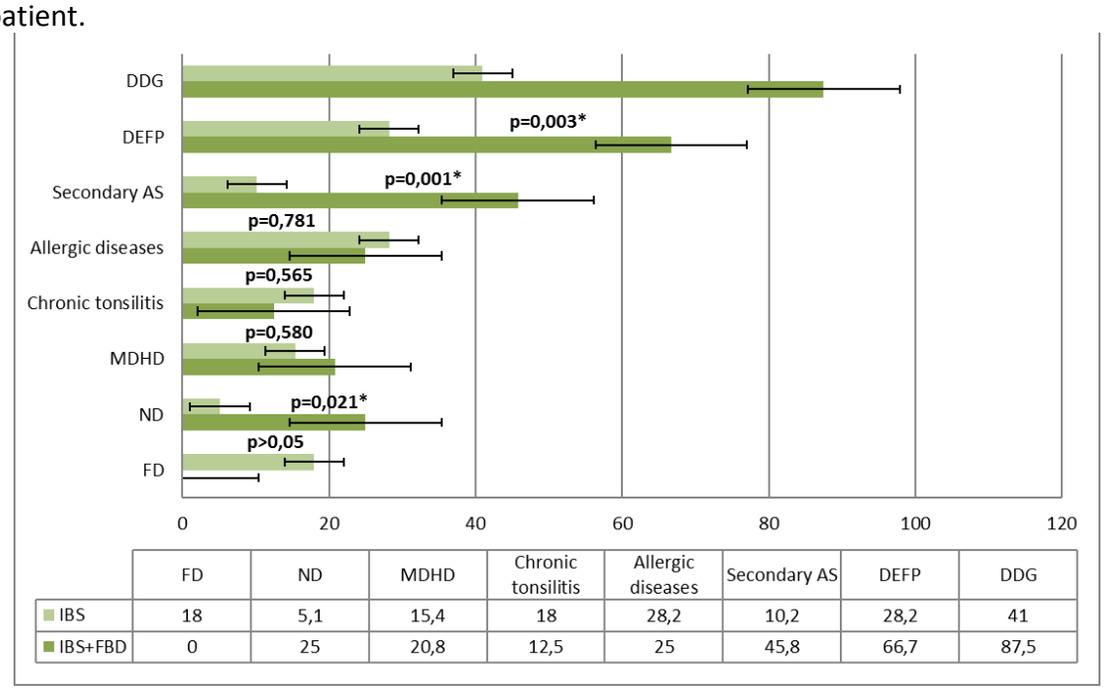
the variant of IBS with prevailing diarrhea was diagnosed in the rest of children (23,08 %).

Syntropic pathology of the digestive organs was found in (84,13±4,6) % of the examined patients. Syntropic functional biliary disorders (FBD) were found practically in one third of patients with IBS (n=24) (38,1±6,12) %, which enabled to isolate those patients into a separate clinical group (IBS + FBD) for further comparative analysis.

Syntropic conditions of the digestive organs in children with IBS include functional dyspepsia – (17,95±6,15) %, disorders of the exocrine function of the pancreas (secondary exocrine insufficiency) – (28,21±7,21) %, developmental defects of the gallbladder (flexure, strangulation) – (41,03±7,88) %. In addition to syntropic pathology of the digestive system a number of comorbid diseases of other organs were found: allergic diseases (bronchial asthma, allergic rhinitis, atopic dermatitis) in (28,21±7,21) %, allergic reactions (urticaria, Quincke's edema) to food and pharmacological means (41,27±7,88) %, minor defects of the heart development (MDHD) (abnormal chorda of the left ventricle, prolapse of the mitral valve) in (15,38±5,78) %, chronic tonsillitis – in (17,95±6,15) %, neurocirculatory dystonia (ND) – in (5,13±3,53) % of patients. Dysmenorrhea and developmental defect of the reproductive system (duplex uterus) were found in one patient.

The following pathology was found in children from IBS + FBD group: developmental defects of the gallbladder (DDG) in the majority of the examined patients – (87,5±6,75) %, disorders of the exocrine function of the pancreas (DEFP) – in (66,67±9,62) %, secondary acetonemic syndrome (AS) – in (45,83±10,17) %, neurocirculatory dystonia – in (25,0±8,84) %, allergic diseases (allergic rhinitis) – in (25,0±8,84) %, minor defects of the heart development (atypical chorda of the left ventricle– in (20,83±8,29) %, chronic subcompensated tonsillitis – in (12,5±6,75) %, instability of the cervical region of the vertebral column was diagnosed in one case.

The conducted analysis (Fig. 2) detected statistically reliable (χ^2 = 13,24; p = 0,000) relations between the rate of abnormalities of the gallbladder as one of the visceral signs of CTD and availability of FBD in the examined patients, which reflects frequent development of bile ducts disorders against the ground of dysplastic changes of the biliary tract. Secondary insufficiency of the pancreas prevailed in children from IBS + FBD group (χ^2 = 8,97; p = 0,003), which gives the evidence of close functional interrelations of the biliary tract and pancreas. Statistically reliable relations (χ^2 = 8,5; p = 0,001) were found between FBD and development of metabolic disorders in the form of secondary acetonemic syndrome that in this group of patients was provoked by dietary



	FD	ND	MDHD	Chronic tonsilitis	Allergic diseases	Secondary AS	DEFP	DDG
IBS	18	5,1	15,4	18	28,2	10,2	28,2	41
IBS+FBD	0	25	20,8	12,5	25	45,8	66,7	87,5

Fig. 2. Comparative characteristics of comorbid pathology in clinical groups

*Notes: GDD – gallbladder developmental defects; DEFP – disorders of the exocrine function of the pancreas; AS – acetonemic syndrome; MDHD – minor defects of the heart development; NCD – neurocirculatory dystonia; FD – functional dyspepsia. * differences are reliable*

disorders mainly (excessive intake of fatty food, overeating). According to our findings the signs of neurocirculatory dystonia were registered more often in children with FBD (χ^2 = 3,65; p = 0,021). Functional dyspepsia was diagnosed in 7 patients possessing similar pathogenic mechanisms with IBS which are mainly manifested by disorders of the motor functions of the gastrointestinal tract and visceral hypersensitivity. Overlap of several functional diseases available is a peculiar characteristic of patients with CTD.

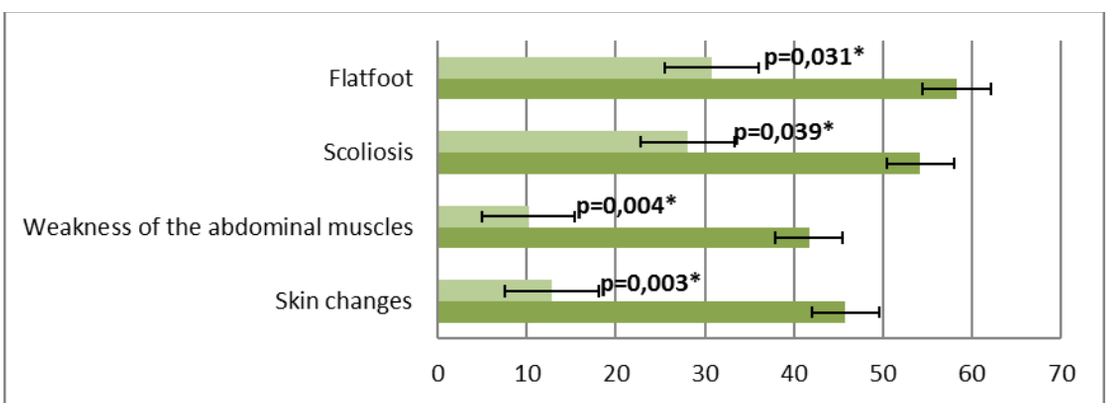
Probably a wide spectrum of comorbid pathology reflects a degree of dysplastic shifts. While assessing phenotype signs of CTD clinically valuable signs (2, 3 degree of severity) were found in (84,13±4,6) % of the examined patients. As the analysis demonstrated, severity of CTD differed depending on the age of patients. Mild and moderate manifestations of CTD prevailed in children of a preschool age (n=16) (OR = 4,27 (95 % CI 1,32 – 13,82; p = 0,025)). At the senior age group (n=42) the number of children with pronounced signs of dysplasia (n=24) was reliably higher (OR = 0,23 (95 % CI 0,07 – 0,76; p = 0,025)).

Objective examination found certain differences by the occurrence of certain phenotype signs among the examined children in clinical groups (Fig. 3).

The data presented in the diagram are indicative of higher chances of the following CTD phenotype signs available in children with IBS + FBD: skin changes in the form of hyperextensibility and scars (OR = 0,17 (95 % CI 0,05 – 0,6; χ^2 = 8,55; p = 0,003)), weakness of the abdominal muscles (OR = 0,16 (95 % CI 0,04 – 0,6; χ^2 = 8,48; p = 0,004)), changes of the osseous-articulatory system – scoliosis (OR = 0,33 (95 % CI 0,11 – 0,96; χ^2 = 4,25; p = 0,039)), flatfoot (OR = 0,32 (95 % CI 0,11 – 0,92; χ^2 = 4,66; p = 0,031)).

In order to determine pathophysiological relations of collagen dysfunction with FGID molecular-genetic examination of patients was conducted with detection of carriage of COL3A1 rs1800255 2092G>A polymorphism. The results of the study found 26 patients (41,27±6,2) % to have *G/G* genotype variant, heterozygous (*G/A*) – in 30 (47,62±6,29) %, mutant variant (*A/A* – polymorphism in homozygous condition) – in 7 children (11,11±3,96) %. Analysis of the data obtained enabled to determine statistically valuable differences between clinical groups of patients: variant of *G/G* genotype prevailed in patients with IBS (n = 22) (OR = 6,47 (95 % CI 1,86 – 22,5; p = 0,004)), in comparison with the patients from IBS + FBD group (n = 4), while heterozygous variant (*G/A*) prevailed in patients with IBS + FBD– 66,67 % (n = 17), (OR = 0,21 (95 % CI 0,07 – 0,62; p = 0,008)). *A/A* variant of the genotype was found more often in patients from IBS + FBD (n = 4) (OR = 0,42 (95 % CI 0,08 – 2,05; p = 0,491)).

Analysis of the data obtained enabled to determine statistically reliable relations of the detected polymorphism (genotype *G/A*) with a number of comorbid diseases in the examined children, and visceral CTD signs in particular (χ^2 = 9,48; p = 0,002): defects of gallbladder development in 22 patients (75,86±7,95) %, minor abnormalities of the heart in 6 ones (20,69±7,52) %, secondary insufficiency of the pancreas in 12



	Skin changes	Weakness of the abdominal muscles	Scoliosis	Flatfoot
IBS	12,8	10,2	28,1	30,8
IBS+FBD	45,8	41,7	54,2	58,3

Fig 3. Rate of CTD phenotype signs in the examined children
** reliable differences*

children (41,38±9,15) %, secondary acetonemic syndrome – in 10 (34,48±8,83) %, allergic pathology – in 9 (31,03±8,59) %, neurocirculatory dystonia – in 5 (17,24±7,01) %, functional dyspepsia – in 3 (10,34±5,65) %. Moreover, statistically valuable relations of *G/A* genotype with the degree of severity and pronunciation of phenotype signs of CTD (χ^2 = 4,5; p = 0,034)) should be mentioned here in children from IBS + FBD group.

Discussion. The study conducted have demonstrated a wide occurrence of syntropic pathology of the digestive organs in patients with CTD, first of all combination of irritable bowel syndrome with functional biliary disorders, which coincides with the data of other authors [5]. Dysplastic-dependent changes of the digestive organs with the development of motor disorders from the side of the intestines and biliary tract make up the ground for the development of secondary pancreatic insufficiency in patients with CTD, which is evidenced by the findings obtained. Predominance of patients from the older age group with pronounced signs of dysplasia reflects the progression of CTD development, which is characterized by inconsiderable amount and expressiveness of phenotype signs at birth. Although in the course of time at the period of the body development and growth under the influence of exogenous factors and lack of preventive measures new signs may occur and previous signs intensify. Defining of external phenotype signs of CTD should direct a diagnostic search to find visceral dysplastic changes, first of all from the side of the digestive organs due to high collagen content in them. Detection of COL3A1 rs1800255 polymorphism in the examined patients is indicative of its important role in pathophysiology of syntropic functional gastrointestinal disorders in children.

Conclusions. 1. Syntropic pathology in case of irritable bowel syndrome in the majority of patients 38,5 % (95 % CI 32,4 – 44,6) is manifested by functional biliary disorders, and with their availability reliable relations are determined with defects of gallbladder development (p = 0,003), disorders of the pancreatic exocrine function (p = 0,003) and metabolic disorders (p = 0,001).

2. The most important phenotype signs of connective tissue dysplasia in children with irritable bowel syndrome are the following visceral disorders: developmental defects of the gallbladder 75,86 % (95 % CI 67,91 – 83,81), minor developmental defects of the heart 20,69 % (95 % CI 13,17 – 28,21), as well as external signs of the: skin (p = 0,003), muscles (p = 0,004), osseous-articular – scoliosis (p = 0,039), flatfoot (p = 0,031), which were associated with functional biliary disorders available.

3. Genetic COL3A1 rs1800255 polymorphism was found in children with irritable bowel syndrome with prevailing genotype *G/A* – 47,62 % (95 % CI 35,04 – 60,2), which reliably more often (p = 0,008) was found in children with syntropic functional biliary disorders and was associated with a wide spectrum of comorbid diseases (p = 0,002) and degree of dysplastic changes (p = 0,034).

Prospects of further studies. The results of a comprehensive examination with determined clinical, molecular-genetic peculiarities of syntropia with functional gastrointestinal disorders in children enable to elaborate differentiated management of such patients, and they require further investigations of other variants of collagen gene polymorphism in order to detect their role in the development of the mentioned pathology.

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MORPHOFUNCTIONAL PECULIARITIES OF THE PERIODONTAL TISSUE UNDER CONDITIONS OF SIMULATED EIGHT-WEEK OPIOID EFFECT

Abstract. *The objective of the work is to examine morphofunctional peculiarities of the periodontal tissue in case of eight-week opioid effect in small doses in the experiment. To achieve the aim light optic examination of the periodontal tissue was used. The tissue was stained with hematoxylin, eosin and azan. Single everyday opioid introduction for rats during eight weeks was found to result in the development of dystrophic-inflammatory changes in the periodontal tissue. The data obtained can be used to make differential characteristics of pathomorphological changes on the microstructural level observed in the dynamics with increasing opioid dose. The above will enable to elaborate methods of probable correcting effect in case of development of generalized periodontitis against the ground of opioid intoxication.*

Key words: *opioid, light optic examination, periodontal tissue, rats.*

Introduction. Numerous literary sources, data of official medical statistics indicate that many pharmaceutical agents in addition to useful therapeutic action can cause complications of different degree of severity [1, 2]. A considerable amount of scientific publications deal with destructive opioid effect on the organs, tissues and body systems, although dental pathology of this contingent of patients is not sufficiently studied [3 - 5]. Considering this aspect it should be noted that today the problem of morphogenesis of chronic generalized periodontitis and chronic periodontitis remains not solved completely [5-7]. In this respect various methods of modeling periodontal injury of inflammatory-dystrophic character are applied [7-13]. Experimental models simulating inflammatory process in animals will enable to determine chronology of changes in the periodontal tissue and paradentium on the whole, which is impossible to be made under clinical conditions in the man in case of development of the similar disease [9,13-15].

The objective of the work is to examine morphofunctional peculiarities of the periodontal tissue in case of eight-week opioid effect in small doses in the experiment.

Materials and methods. The study was performed on 16 outbred mature male rats with the body weight of 255 g, aged 4,5 months. The animals were given a single intramuscular injection of the drug “Nalbuphine” every day during 8 days. The dose of the opioid analgesic was increased to the maximal single dose from 0,212 mg/kg to 0,283 mg/kg at the end of the 8th week. The animals were divided into 2 groups in the experiment. In the first group rats were given the drug “Nalbuphine” during 56 days followed by taking material (at the end of the 8th week). The second control group during 8 weeks was given intramuscular injections of physiological solution at the same period of time. The animals were kept in vivarium; everything concerning their keeping, care, marking and other manipulations were conducted according to the principles of “The European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes” (Strasbourg, 1985), the Law of Ukraine № 3447 – IV «On Protection of Animals against Cruel Treatment». The Bioethics Committee of Danylo Halytsky Lviv National Medical University determined that the scientific study corresponds to the ethic requirements according to the Order of the Ministry of Public Health of Ukraine № 231 dated 01. 11. 2000 (minutes № 10 dated 26.12. 2011), (minutes №2

dated 20.02.2012). Before taking material for biopsy the animals were put to sleep by means of intraperitoneal thiopental introduction (25 mg/kg). Amputated upper and ex-articulated lower jaws were used for light optic examination, considering topographic correlation of the dental tissue on histological specimen 5-7 mcm thick. The tissue specimens were prepared according to the common method with previous decalcification [16] stained with hematoxylin, eosin and azan by Heidenhain's method. The specimens were microscopically examined and photos taken by means of the microscope Meiji MT4300 LED and digital camera Canon EOS 550D.

Results and discussion. Everyday injection of opioid analgesic in small doses to rats during 56 days was found to result in the development of dystrophic-inflammatory changes in the periodontal tissue. Morphological changes found under light optic microscope can be compared with clinical signs of generalized periodontitis.

Tissue injuries first of all refer to the gingival structures. Keratosis, the signs of hyperkeratosis and hypertrophy of the stratified squamous keratinized epithelium were found in the adjacent and free parts of the gums. In all the cases desquamation was intensified with exfoliation of destructed epithelial cells. At the same time, slow regeneration of the epithelial layer and progress of desquamation process results in increasing gradual atrophy of the gingival structure. It is manifested by thinning of the oral and sulcus epithelial portions of the free gingival part. Moderate acanthosis of the epithelium was found in the free and adjacent parts of the gums. Epithelial papillae were mainly of irregular size, smoothed, moderately developed or absent, as it is seen on Figures 1 and 2.

In the result of progressing of dystrophic-inflammatory process against the ground of long opioid intoxication, the rate of regeneration of sulcus and connective portions of the epithelium of the free gingival part was determined. As a result, generalized injury of the gingival structures leads to the destruction of the epithelial attachment and formation of periodontal pocket.

The changes found were associated with diffuse erosion of the sulcus and connective epithelium with perforation of the periodontal pocket bottom, which is the place for entrance of pathogenic microorganisms into the periodontal tissue. Hyperplasia and signs of desquamation of the periodontal pocket epithelium were determined, as it is seen on fig. 3.

Changes of dystrophic-inflammatory character prevailed in the spongy fibrous and dense shapeless connective tissues, where pronounced swelling was found with exfoliation and destruction of the collagen fibers. Fibrinoid swelling with exfoliation of the spongy connective tissue was found in the papillary layer of the proper lamina of the gingival mucous membrane. Single signs of moderate fibrosis with diffuse round cellular infiltration were determined in the

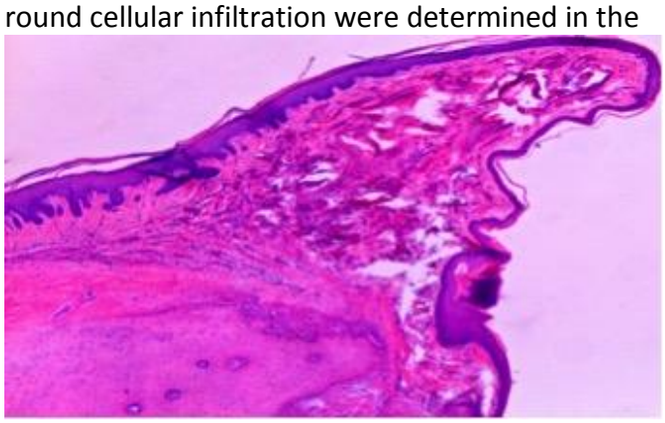

Fig. 1. Periodontal tissue of a rat 8 weeks after opioid injection. Stained with hematoxylin and eosin. Magnified: x 100.

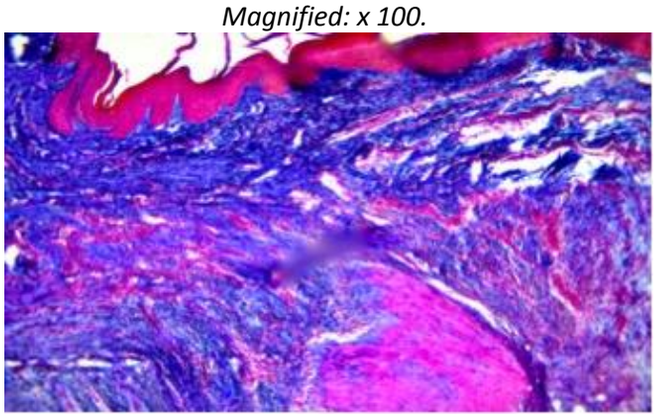

Fig. 2. Periodontal tissue of a rat 8 weeks after opioid injection. Stained with azan. Magnified: x 200.

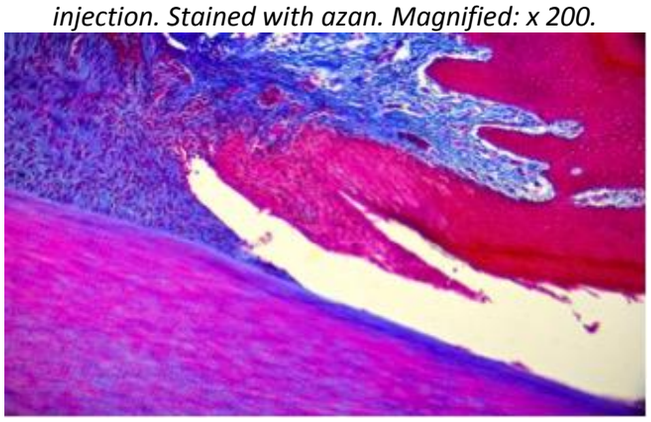

Fig. 3. Periodontal tissue of a rat 8 weeks after opioid injection. Stained with azan. Magnified.: x 200.

subepithelial layer. The connective tissue papillae were moderately outlined and smoothed. In certain cases in the area of the formed periodontal pocket acanthotic cords were found with proliferation of the connective tissue into hypertrophic epithelium of the gingival papilla. In the reticular layer of the proper lamina venostasis was detected, focal hemorrhages of diapedesis character and insignificant intensification of trophism resulted from the opening of a reserved capillary group of the afflicted area, as it is seen on fig. 1, fig. 2 and fig. 3.

Hyperplasia with exfoliation of fibers of the dense formed connective tissue was found within the borders of marginal periodontal tissue. Progressing of the diffuse injury of tissue in the area of the periodontal pocket was directly associated with destruction of collagen fibers of the circular ligament. Spongy fibrous shapeless connective tissue of the apical periodontal tissue was mainly thinned, where by the morphological peculiarities of the fibrous direction peri-radical and periosteal layers were determined. Diffuse round cellular infiltration without vessels filled with blood was determined in the periradical layer, which differed by more compact and longitudinal direction of fibers. The signs of mucoid swelling were found in the periosteal layer, where collagen fibers were of a bundle structure. The vessels filled with blood with the signs of venostasis were also determined as it is seen on fig. 2 and fig. 4.

The osseous tissue of the dental cell is mainly non-homogenous which is caused by local portions of the resorptive process and metaplasia. The signs of lacunar resorption were determined in the area of the intercellular septum apex. The signs of substitution of the osseous tissue by the connective one along the external margin of the intercellular septum were found as a sign of inconsiderable processes of compensation. Numerous Haversian canals with the signs of osteofibrosis were found, as well as hyperplasia of the periosteum with proliferation of osteoblasts in the compact layer of the periosteum, as it is seen on fig.1; fig. 2 and fig. 4. Primary and secondary dental cement were characterized by hypercementosis, found in the area of the upper third and within the borders of the dental root apex, as it is seen on fig. 3 and fig. 4.

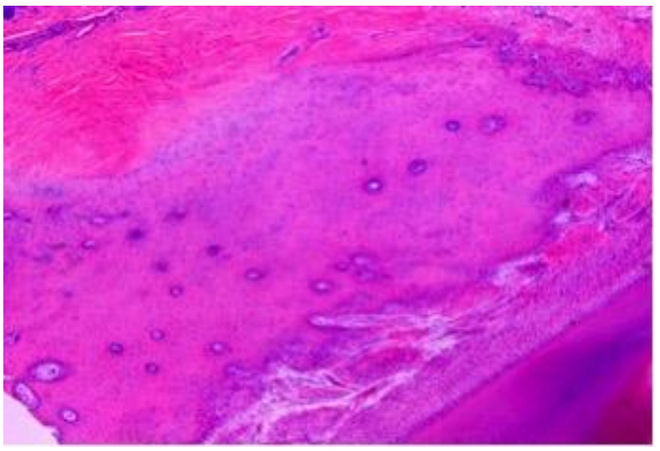

Fig. 4. Periodontal tissue of a rat 8 weeks after opioid injection. Stained with hematoxylin and eosin. Magnified: x100.

Conclusions. Opioid analgesic effect in small doses during 8 weeks resulted in diffuse injury of the periodontal tissue on the microstructural level. Intensification of desquamation process was indicative of the integrity damage of the epithelial barrier and at the same time, it is one of the signs of protective reaction of the oral mucosa. As a result, pronounced thinning off the epithelium and deterioration of blood supply of the proper lamina promoted slow gingival atrophy. The signs of fibrinoid swelling with incomplete opening of a reserved group of capillaries, disturbed permeability of the blood vessels and rheological blood properties in the connective tissue against the ground of development of resorptive process in the osseous tissue, were indicative of progressing of dystrophic-inflammatory changes in the periodontal tissues.

Prospects of further studies. The determined pathomorphological changes can be used for differential characteristics of morphological signs in the periodontal tissues with increasing dose of opioid analgesic effect in small doses at different terms. The results obtained can be used in future to initiate possible correcting influence in case of development of simulated generalized periodontitis occurring due to chronic opioid effect.

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INVESTIGATION OF SOME PSYCHOLOGICAL ASPECTS OF INFORMATION PROCESSING BY STUDENTS OF MEDICAL UNIVERSITY

Abstract. *183 students of medical university were interviewed using modern methods of psychotype determination. After that students' psychic qualities, important for successful study, were assessed (such as attention, memory for visual stimuli, operation of logical information) in groups of respondents, distributed according to the leading psychological functions. It has been established that the studied mental qualities and perception of information depend on the leading functions of a psychotype. Therefore, investigations of ways how to improve assimilation of educational material by students, using their psychotype properties, are of grait interest.*

Key words: *psychology in pedagogy, pedagogy in medicine, educational information, professional competences, psychotype, jungians psychological functions.*

Introduction. Modern realities require from students of medical universities to be able not only to assimilate intensively a large volume of information but moreover to transform it into professional competences (experience and skills). According to Swedish psychiatrist K. Jung theory, later developed and complemented by his followers [1, 4, 6], the ability to process information is determined by certain mental faculties called psychological functions. Such a statement is based on investigations claiming that some people can better process logical information (considerations, conclusions, proofs), while others can better operate with emotional one (relations of people, their feelings). Some individuals are characterized by more advanced intuition (anticipation, perception in general), while others – by advanced sensation (perception of external and internal sensory stimuli) [1, 6]. According to this 16 psychological types were designed which are based on pairs of psychological functions. Thinking (T) and feeling (F) determine the basis for decision-making; intuition (N) and sensing (S) – ways how to accept information; extraversion (E) and introversion (I) – consciousness orientation, while judging (J) and perception (P) – organization of life. In each pair of functions somebody usually prefers to use one more often than the other [1, 4, 6]. According to concept of A. Kepinski and A.Augustinavichute, jungian functions are in the same time channels of information perception. Various psychotypes can unequally process the same aspect of information. Filally, information of the same type is transmitted and perceived by the same functions of communication partners only [1, 6].

Practical application of above mentioned principles could improve the process of information assimilation by medical students. Moreover, today there is only little evidence of how much students' qualities, important in studing process**,** are associated with their psychological types.

The aim of the study: to investigate individual psychological qualities of students (attention, memory, perception of visual material, logical operation with information), depending on their leading psychological functions.

The sample and methods. The research covered 183 3rd-year medical faculty students of I. Horbachevsky Ternopil State Medical University, Ukraine, aged 19-21, including 112 females and 71

males, residents of different regions of Ukraine. Psychotypes of respondents were identified using the following methods: 1) interviewing respondents using Myers-Briggs Type Indicator® (MBTI®) [4], 2) acquaintance with descriptions of psychotypes [1], 3) diagnostic interview using Meged'-Ovcharov's test [2].

After that the respondents were examined for such psychic qualities needed in learning process as attention, memory for visual objects, operation of logical information. Standard questionnaires were selected for the purpose addopted in professional psychodiagnosis and in occupational sciences [3]. The obtained results were processed by methods of variation statistics with the calculation of the average value (M), its errors (m), reliability (P) **[**5]. The difference between the mean values of the indicators was considered reliable at P<0,05. Calculations were carried out using the application computer program "Excel spreadsheets" (Microsoft, USA).

Results of the research. For the purpose of determining the psychotype, 183 respondents were tested by the MBTI® test, and also they were acquainted with psychotypes descriptions of which each of respondents had to choose one seemed the most natural to him/here. On the next stage of the research the diagnostic interview was conducted to each respondent in order to clarify the dominant function in each pair of jungian functions. The psychotype was considered to be defined if the results of 2 or 3 of the 3 polls coincided. 19 students (10,4 % of all respondents), whose results of 3 trials did not coincide, were not included in further studies. Considering that the description of each psychotype gives a complete set of leading jungian functions, we represented their distribution among the rest of respondents whose psychotype was established (see table 1).

Next stage of the study was devoted to students' mental qualities investigation (attention, processing of logical information, memory). In order to study the dependence of these properties on the leading psychological jungian functions, all the respondents were consequently separated into two groups corresponding to pairs of functions (S-N, F-T, J-P, E-I), the results were compared between two groups of each pair. The groups were named according to dominant function as in Mayers-Briggs classification (see table 1).

Selectivity of attention, its concentration and volume were investigated using the Munstenberg's technique. During 2 minutes the investigated person had to look through, find and underline words, hidden in the text where there were no spaces between words and the words were put into the random set of letters. The result was represented in units called "indicator of success". It was calculated by the formula, based on number of correctly and incorrectly underlined words. The results of the study are presented in table 2.

Table 1

Distribution of leading psychological functions among respondents, %

Pairs of psychological functions	Leading function / name of group of respondents	Number of students	% of respondents
Sensing (S) –Intuition (N)	Sensing / S	105	64,0
	Intuition / N	59	36,0
Feeling (F)- Thinking (T)	Feeling / F	103	62,8
	Thinking / T	61	37,2
Judging (J)- Perceiving (P)	Judging / J	101	61,6
	Perceiving / P	63	38,4
Extraversion (E)- Introversion (I)	Extraverts / E	117	71,3
	Introverts / I	47	28,7

It was established that concentration and selectivity of attention in the interviewed students were higher in Thinking (group T) in comparison with Feeling (group F) (P<0,05). There was no difference of this property in pairs of groups Sensing-Intuition (S-N) and Extraversion-Introversion (E-I), but the insignificant trend was observed toward better selectivity of attention from Perceiving (group P) opposite to Judging

(group J) (t =1,77, P>0,05).

Logical thinking was studied according to the following tests: 1. Test "Quantitative relations" is based on solving 18 logical expressions within 5 minutes, each of the expression contains values A, B and C, there are certain numerical relationships between A and B, B and C. It was necessary to find the relation between A and C. 2. Purpose of the test "Regularities of the numerical series" was to assess the logical aspect of thinking based primarily on information analysis and synthesis. Students had to set the rules for constructing 7 series of digits and insert numbers that were missing in accordance with the given regularity of the series during 5 minutes. The evaluation of both tests was carried out using the scale based on the number of correct answers.

Table 2

Results of respondents' psychical qualities assessment

Name of test / Groups of students	Concentration of attention, indicator of success	Quantita-tive relations, points	Regulariti-es of the numerical series, points	Memory of images, points	Recognizing the figures, points
F, n=103	0,82±0,02	10,14±0,55	9,33±0,51	0,964±0,024	11,30±0,40
T, n=61	0,87±0,01	12,28±0,89	11,42±0,41	0,920±0,026	11,13±0,70
P	*	*	***		
S, n=105	0,84±0,01	9,75±0,70	10,43±0,51	0,970±0,017	11,214±0,47
N, n=59	0,84±0,02	12,75±0,72	9,67±0,61	0,798±0,011	12,75±0,67
P		**		****	
J, n=101	0,81±0,02	10,08±0,77	10,67±0,52	0,934±0,023	11,40±0,59
P, n=63	0,86±0,02	11,75±0,70	9,50±0,65	0,948±0,028	11,00±0,44
P					
E, n=117	0,84±0,02	10,50±0,58	10,43±0,88	0,978±0,011	10,67±0,58
I n=47	0,83±0,01	10,50±1,05	9,67±0,51	0,793±0,033	14,00±0,37
P				****	****

*Note: P – the criterion of reliability when comparing the results of the study in groups distributed in pairs of jungian functions: * – P<0,05, ** – P<0,01, *** – P<0,002, **** – P<0,001.*

According to the results of the study, the group of Thinking (T) showed significantly better ability to recognize both hidden patterns (P<0,002), and numerical relationships (P<0,05). The result could be assumed. Futhermore, there was observed better recognition of quantitative relationships in group N in comparison with group S (P<0,01), while the missed digits in numerical series in these groups were recognized with the same success. There was a weak trend toward better vision of numerical relationships among students of group P (t=1,6, P>0,05), whereas regularities were better solved by respondents of group J (t=1,40, P> 0,05).

In order to study short-term memory on visual stimuli, the following tests were used: 1. Test "Memory of images": respondents had to memorize during 20 sec the maximum number of images (well-known objects, geometric figures, letters, numbers) from a given table, and then for 1 min they had to reproduce these images (to write a name or to draw). 2. Test "Recognizing the figures" was focused on evaluation of short-term memory on abstract figures formed by bent or broken lines. Respondents had to observe carefully 9 figures in a given table for 10 seconds. Then they were shown another table with more figures, where it was necessary to find figures from the first table. The assessment of both tests was carried out using the scale based on the number of correct answers.

It was established (see table 2) that students with extrovert attitude (group E) reliably better reproduced images (P<0,001), whereas memory on abstract figures was significantly better in group I (P<0,001). In addition, in pair of functions F-T, a weak trend was observed towards better recognition of images by group F (t=1,24, P>0,05). At the same time, there was no difference in

recognition of abstract figures in both groups (t=0,21, P>0,05). The Sensing better memorized images (P<0,001). There was also a trend for better recognition of abstract figures by group I (t=1,88, P>0,05).

In groups J and P the research results were practically equal inn all tests/

Discussion. It was established that such mental qualities as concentration and selectivity of attention, solving the regularities of numerical series (which characterize the ability to see hidden patterns) as well as numerical relationships (shows the ability to recognize relations between objects) were better developed in students with leading psychological function "thinking". However, there were only 32,7% of such students among the respondents. In the rest 2/3 of the students the leading function was "feeling" so these students probably were oriented on ethical aspects of information rather than on logical aspects.

There were also differences in perception of visual stimuli: students with leading function "extraversion" and "sensing" reliably better memorized well-known images, while memory on abstract figures was much better developed in students with leading introversion. This can be explained by the fact that the extravert setting is directed at the object, therefore familiar objects are easier to recognize, while the introversion is directed on the relations between objects.

In general in pair of groups E-I (Extraversion-Introversion) the reliable differences of test results relate to visual material perception while there is no difference in processing of logical material. All this means that as students perceive information in different ways, it is not a good idea to provide training material only through the channel of thinking, many of them require more visual representation of information.

Conclusions. Individual mental qualities such as selectivity of attention, its concentration and volume, memory on visual objects, operation of logical information relate to psychological type of a student. It is necessary to continue research based on psychological aspects of information perception and processing in order to improve education of stuents in medical universities.

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COMPARISON OF GESTATION AND LABOUR IN WOMEN WITH MULTIPLE PREGNANCY AND MONOCYESIS

Abstract. *Analysis of the development of gestation demonstrated that contrary to monocyesis multiple pregnancy in women provokes exacerbation of chronic extragenital diseases due to increased load on all the organs and systems, especially on the cardio-vascular one. Multiple pregnancy is a risk factor causing anemia, miscarriage, placental dysfunction, pre-eclampsy, intrauterine infection, developmental retardation and fetal distress. Patients with multiple pregnancy reliably more often develop complications in labour (p<0,05). The frequency of perinatal loss in case of multiple pregnancy is 2,5 times higher than that of monocyesis. Analysis of complication rate from the side of mother and fetus in case of surgical delivery is indicative of the fact that cesarean section is not a selective method of delivery in case of multiple pregnancy.*
Key words: *multiple pregnancy, miscarriage, placental dysfunction.*

Introduction. In recent years increased number of delivery with more than fetus has been recorded. Scientists from different countries of the world do not keep to one opinion concerning etiological factors promoting multiple pregnancy [2, 4, 7, 8]. This issue is constantly discussed and supplied with new scientific data. In 50% of cases multiple pregnancy is caused by heredity. Recently occurrence of multiple pregnancy has been associated with application of modern reproductive technologies: stimulation of ovulation and in vitro fertilization (IVF). Multiple pregnancy is also considered to occur due to fertilization of the ovum in which ovulation has already occurred against the ground of already existing ovum. A part of women have unknown causes of multiple pregnancy [3, 5, 6].

Development of two or more fetuses increases burden on the female organism, which adaptation possibilities not always are able to ensure normal development of pregnancy. According to the data suggested by different authors maternal sickness rate with pregnancy and labour in case of twin pregnancy becomes 3-7 times higher. Perinatal and neonatal mortality rate increases considerably [1, 2, 4, 6]. Therefore, investigation of different aspects of multiple pregnancy with the purpose to elaborate appropriate preventive measures concerning decrease of various complications has become more topical.

Objective: to study peculiarities of the development of gestation and labour in case of multiple pregnancy in comparison with monocyesis.

Materials and methods. Individual medical cards of pregnancy and delivery case histories of 60 women with multiple pregnancy (I group) were analyzed. 20 women with monocyesis constituted II group. The data of general, obstetric-gynecological, somatic, family anamnesis, clinical signs of pregnancy and labour, condition of newborns were examined. All the women with multiple pregnancy were diagnosed to have twins. Condition of the fetus was assessed according to the findings of cardiotocography, ultrasound diagnostics, biophysical profile of the fetus and Doppler results.

To determine statistical reliability of difference between the group mean the parametric statistical method Student t-criterion was applied.

Results and discussion. The examined women were similar by age (from 20 to 38 years). According to family anamnesis genetic susceptibility to multiple pregnancy was found in 15% of cases. Analysis of obstetric-gynecological anamnesis determined the following: I group contained more primiparas (70%) than II group (45%). Previous pregnancies were more often interrupted in II group (10% in I group and 15% - in II one).

Gynecological sickness rate was practically similar in both groups: cervical erosion was found

in 3 women of I group (5%) and in 1 woman (5%) from II group. Infertility in anamnesis was found in 12 women (20%) from I group and 2 women (10%) – from II group. Menstrual cycle disorders were detected in 9 women (15%) from I group and 1 woman (5%) – from II group. It should be noted that a share of inflammatory diseases of the female reproductive organs was rather high: 18 women from I group (30%) and 2 patients (10%) – from II one.

Examination of a share of extragenital pathology showed that women with multiple pregnancy were more often diagnosed to suffer from cardio-vascular diseases than those with one fetus in pregnancy. Thus, vegetative-vascular dystonia was found in 45 examined women (75%) from I group and 3 women (15%) – from II group; essential hypertension – in 15 (25%) patients from I group and 1 (5%) – from II group; mitral valve prolapse – in 12 (20%) women from I group and 1 (5%) – from II group; varicose veins of different severity – in 33 (55%) examined women from I group and 2 (10%) – from II group. These data correspond to the results of studies conducted by other scientists [1, 2, 4, 5] and are explained by increased burden on the cardio-vascular system of women with multiple pregnancy.

Gastro-intestinal pathology was detected in 18 (30%) women from I group and 4 (20%) – from II group; diseases of the thyroid gland – in 27 (45%) patients of I group and 6 (30%) – from II group. Urinary pathology was found in 18 (30%) women from I group and 3 (15%) – from II group. It should be noted that during pregnancy women with multiple pregnancy often develop exacerbation of chronic extragenital diseases at the expense of increased burden on all the organs and systems [1, 6, 7].

Analysis of the development of pregnancy resulted in obtained data indicative of increased number of complications in patients with multiple pregnancy. Anemia should be mentioned here as that of having high frequency in case of multiple pregnancy (75% against 30% in the second group), (Table 1). It is explained by the fact that during pregnancy with twins intravascular volume increases, iron deposits become exhausted, resulting in reduced hemoglobin level, especially during III trimester, and thus it determines reasonability to indicate iron-containing preparations at the very early terms of pregnancy [2, 5, 8]. Threat to interrupt pregnancy occupies the second position among complications. Thus, 42 (70%) women with twins were under the threat of miscarriage in different terms, and in II group there were 2 such women (10%), ($p<0,01$). Higher risk of late miscarriage in women with multiple pregnancy than those with monocyesis should be noted ($p<0,05$). At the early terms of pregnancy the frequency of miscarriage threat was similar in both groups ($p>0,05$). Placental dysfunction (PD) was on the third position. It was diagnosed in 39 (65%) women of I group and 3 cases (15%) in II group. These findings correspond to the results of other investigations, and multiple pregnancy is considered as PD pattern. According to the number of complications for mother, fetus and newborn it belongs to high risk pregnancy [2, 3, 5, 6]. Early and late toxicosis in case of multiple pregnancy was found twice as often than in case of monocyesis. Perinatal mortality rate in I group was 2,5 times higher than that in II group.

In case of multiple pregnancy special attention was paid to the assessment of the development and condition of the fetuses. Gravidogram and assessment of the expected fetal weight according to Blichstein scale was conducted continuously. Every 3-4 weeks transvaginal cervicometry was carried out.

USD monitoring of the development of pregnancy diagnosed retardation of the intrauterine development of one or both fetuses in 21 women (35%) with multiple pregnancy and in 1 woman (5%) with monocyesis ($p<0,01$). Reliably higher frequency of retardation of the intrauterine development in case of multiple pregnancy can be caused by exhaustion of adaptation mechanisms of the uterine-placental circulation. Moreover, anemia can be considered as one of the causative factors of retardation of the intrauterine development as well.

It should be noted that 30% of pregnancies with twins were achieved by means of auxiliary reproductive technologies, which to certain extent explains a high percentage of intrauterine infection of the fetus. Women with multiple pregnancy are likely to have considerably lower immunity than in those with monocyesis. One of the signs to decrease protective mechanisms of the body and intrauterine infection available in

case of multiple pregnancy is rather frequent pathology of the amnion (in I group – 15%, in II – 5%). Substantial increase of the frequency of intrauterine infection of fetuses in case of multiple pregnancy as compared to monocyesis requires deeper investigation. Moreover, infection of the amniotic membranes is known to promote their preterm rupture and preterm delivery [2, 3].

The complications of pregnancy mentioned above can lead to the development of twin-to-twin transfusion syndrome. Intrauterine death of one of the fetuses can cause cerebral ischemia of a live twin and following neurological disorders [2, 3, 6]. Therefore, the issues of management of multiple pregnancy are in the focus of special attention.

Assessment of biophysical profile (BPP) of fetuses from I group at 36-37 weeks of gestation (30 women) found out 9-9 score in 2 fetuses (3,34%), 8-9 score – in 6 (20%), 8-8 score – in 12 (40%), 7-8 score – in 6 (20%), 7-7 score – in 5 (16,67%), 6-7 score – in 2 (3,33%), 3-5 score – in 1 (1,66%). In II group there were the following results detected: in 16 women (80%) condition of fetuses was assessed as being 9-10 score, in 3 (15%) – in 8-9 score, in 1 (5%) – in 7-8 score.

Doppler circulation test in the umbilical vessels in women from I group was found to be normal in 80% of cases, slow circulation – in 16,67%, zero circulation – in 1 (3,33%). In II group only one case (5%) was characterized by slow circulation.

Development of delivery in the examined groups differed considerably as well. Thus, abnormal uterine contractions were detected twice as much in case of multiple pregnancy, obstetrical bleeding 4 times as much, fetal distress – 6 times as much, intrauterine fetal infection – 12 times as much as compared to the delivery with one fetus (Table).

Preterm delivery occurred in 33 (55%) women from I group, in II group - in 1 (5%) case. Analysis of the term of childbirth in case of multiple pregnancy demonstrated that preterm delivery at 22-27 weeks of gestation occurred in 3 (5%) patients, at 28-33 weeks – in 9 (15%), at 34-36 weeks – in 15 (25%), at 35-36 weeks – in 3 (5%), at 36-37 weeks – in 3 (5%), at 38-39 weeks – at 27 (45%). Therefore, in case of multiple pregnancy preterm delivery occurred more often at the term of gestation 28-33 weeks and 34-36 weeks.

The issues of surgical delivery in case of multiple pregnancy are of special attention. Cesarean section was performed in 30 (50%) women out of 60 ones with twin pregnancy, including 24 (40%) planned surgeries due to the following indications: pregnancy after auxiliary reproductive technologies (ART) – 12 cases (20%); lack of effect after treatment of severe pre-eclampsy – 3 cases (5%); irregular position or breech presentation of the first fetus – 6 cases (10%); according to the combined indications – 3 cases (5%).

6 (10%) women were operated on by means of cesarean section in urgent case due to: premature abruption of the normal placenta – 3 cases (5%); fetal distress – 3 cases (5%). In II group cesarean section was oerformed only in one case (5%) due to premature abruption of the normal placenta.

Table

Frequency of complications of pregnancy and labour

№	Gestation complications	Clinical groups			
		I,n = 60		I,n = 20	
		n	%	n	%
1.	Anemia	45	75	6	30
2.	Threat of miscarriage	42	70	2	10
3.	Placental dysfunction	39	65	3	15
4.	Early toxicosis	18	30	3	15
5.	Pre-eclampsy	18	30	3	15
6.	Amnion pathology	9	15	1	5
7.	Intrautetine fetus infection	12	20	-	-
8.	Fetus distress	6	10	-	-
9.	Developmental retardation of fetus	21	35	1	5
10.	Preterm delivery	33	55	1	5
11.	Obstetrical bleeding	12	20	1	5

It should be noted that frequency of birth of babies with the body weight over 2500 g in case of monocyesis was 85%. In case of multiple pregnancy it was 55% (p<0,01). In I group as compared to II group babies with the body weight of 1000-1500 g were born reliably more often, as well as over 1500 g, but less than 2500 g (p<0,01 and p<0,001, respectively). It is indicative of a complicated effect of multiple pregnancy on perinatal results.

Comparative assessment of newborns' condition in case of different methods of delivery showed that condition of newborns was not always better after cesarean section. However, there were more complications from the side of mother and fetus (20%). It should be noted that 4 women with twin pregnancy after application of ART delivered spontaneously. Their children were born without asphyxia. Therefore, the data obtained are indicative of the fact that cesarean section is not a selective method of delivery in case of multiple pregnancy. The issues concerning this operation in case of multiple pregnancy should be considered more thoroughly.

Conclusions:

1. Multiple pregnancy is characterized by the tendency to miscarriage. The threat of its interruption increases with the term of gestation.
2. Multiple pregnancy is associated with development of anemia making the condition of mother and fetus worse.
3. Careful antenatal screening of infections is of great practical value: it will promote decrease of preterm delivery, intrauterine infection of the fetus, developmental retardation of fetus, perinatal sickness and mortality rates.
4. Exhaustion of adaptation mechanisms of the uterine-placental circulation and anemia available result in retardation of the intrauterine development of fetuses in case of multiple pregnancy.
5. In case of multiple pregnancy the share of surgical delivery is rather high which does not improve the condition of a newborn and requires careful consideration.

Prospects of further studies: to improve prevention methods of miscarriage and objectification of fetal conditions in case of multiple pregnancy.

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NECESSITY OF SURGICAL SANATION OF ORAL CAVITY IN PATIENTS WITH DIABETES TYPE 2 WITH SECRETARY ACTIVITY OF PAROTID SALIVARY GLANDS

Abstract. *The paper presents the results of the study of secretory activity of parotid salivary glands in 51 patients with type 2 diabetes mellitus with subcompensated (29 patients) and decompensated (22 persons) stages of the disease in the age of 38-69 years who needed surgical sanitation of the oral cavity. Degradation of functional activity and reduction of compensatory possibilities of parotid salivary glands are revealed. Daily instillation into the duct system of the parotid glands "Lizomycoid" during 10 days has allowed to significantly increase the production of parotid secretion and increase the total amount of oral fluid.*

Keywords: *diabetes mellitus type 2, parotid salivary glands, oral fluid.*

Introduction. In monographs, periodicals, a considerable number of scientific publications are devoted to the coverage of the issues of the relationship between general-somatic pathology and changes in the state of the organs of the oral cavity associated with hemodynamic disorders, metabolic processes, immunological and neurohumoral disorders in the body [4, 8, 15,]. Another exception is diabetes type 2 (DM) – one of the most common endocrine diseases, which is a global medical problem and poses a threat to human health [10]. Thus, in 2000, the number of patients with diabetes in the world amounted to 171 million people (2.8%), then in 2014 - 386 million, and by 2035, experts of the International Diabetic Federation predict an increase in the number of patients in the world by 55% - up to 592 million people [14]. A similar situation is typical for Ukraine, where today there are more than 1.3 million patients with type 2 diabetes [10].

Quite often, the first manifestations of diabetes indicate changes in the oral cavity. There is dryness and stickiness of the mucous membrane, hyposalivation, which contributes to the deterioration of the hygienic state of the oral cavity, the destruction of solid tissues of the tooth, periodontal, disturbed the ratio of components of the oral liquid [2, 9]. Of course, a special place in the nature of the manifestations of these changes is deduced from the functional activity of large spleen glands, including parotid [3, 6]. In the sources of literature there is a large number of publications on the relationship and dependence of physical and chemical properties, the composition of oral liquid from the presence of dental pathology and associated somatic diseases [1, 17]. The reaction from the large salivary glands is an important indicator of the adaptive capacity of the organism to internal and external irritation factors [1, 11]. Reducing their functional activity, reducing secretion, changes in viscosity, specific gravity of the oral fluid, pH leads to a deterioration of the physiological process of oral cleansing, metabolic disorders, causing the development of inflammatory and dystrophic diseases [12].

In particular, in diabetes mellitus there is an increase in large salivary glands and is interpreted as a manifestation of compensatory activity due to the presence in their structural components of insulin-like substances. Hyposalivation at the same time develops gradually with the progression of the disease [5, 16], but research on the study of this issue is not enough, which determines the relevance of scientific developments in this direction.

Objective: to study the secretory activity of

parotid salivary glands in patients with diabetes mellitus requiring surgical sanitation of the oral cavity and possible ways of correction of the revealed violations.

Material and methods. We examined 51 patients with type 2 diabetes mellitus with subcompensated (29 patients) and decompensated (22 patients) stages of the disease in the age from 38 to 69 years. The control group consisted of 25 somatically healthy patients of the same age.

In all patients, a general-clinical dental examination was performed [9], and the oral liquid was taken in the morning on an empty stomach for 5 minutes without stimulation, and additionally after stimulation and parotid secretion from both glands for 30 minutes. The procedure was performed in the primary examination, after stimulation and treatment.

The previous studies conducted by us have shown a decrease in the total amount of oral fluid in patients with type 2 diabetes [13]. Taking into account this fact, we decided to further study the functional activity of the parotid salivary glands and established a significant reduction in the amount of parotid secretion, which prompted us to look for opportunities to increase their secretory capacity. To this end, all patients for 10 days appointed oral baths with "Lizomycoid" 3-4 times a day. However, the repeated study of the parameters allowed to establish the insignificant influence of such a method of applying it to the total salivation and the amount of parotid secretion. Therefore, an additional month, an attempt was made to examine the effect on their function of single-dose instillations "Lizomycoid" during 10 days directly into the duct system of parotid glands (Table 1, 2).

The obtained digital data was processed using a variational-statistical analysis, and the reliability of the differences was assessed according to the Student's criterion using the editor of Microsoft Excel [7] and recognized them as reliable at $p < 0.05$. Given the insignificant difference in the amount of secretion obtained from the symmetric glands, we give the averaged data of this indicator.

Results of the research and their discussion. In the control group, the average amount of oral fluid per minute was 0.66 ± 0.02 ml and it increased to 0.84 ± 0.04 ml after stimulation. Functional activity of parotid glands for 30 min was 1.72 ± 0.08 and 1.98 ± 0.05 respectively.

They followed a natural tendency to increase the salivation rate and increase the amount of parotid secretion after the use of oral trays with Lizomycoid, and especially after instillation into the duct system of parotid glands (Table 1, 2).

Study of the salivation rate allowed to establish that the amount of unstimulated oral fluid in patients with type 2 diabetes decreased by 2.0 times with subcompensated and 2.2 times in the decompensated stages of the disease. The amount of parotid secretion decreased by 1,3 and

Table 1

Total amount of oral fluid in patients with type 2 diabetes depending on the measures (M ± m)

Investigated contingent	Measures and amount of oral fluid (ml / min)			
	No stimulation	After stimulation	After oral baths with "Lizomycoid"	After Instillations "Lizomycoid"
Healthy (n=25)	0,66±0,02	0,84±0,04 $p_1<0,05$	0,72±0,03 $p_1<0,05$	0,75±0,03 $p_1<0,05$
Patients with subcompensated stage of disease (n=29)	0,33±0,02 $p_2<0,05$	0,36±0,02 $p_2<0,05$	0,43±0,02 $p_2<0,05$	0,54±0,02 $p_2<0,05$
Patients with decompensated stage of disease (n = 22)	0,29±0,03 $p_3<0,05$	0,31±0,02 $p_3<0,05$	0,41±0,03 $p_3<0,05$	0,52±0,03 $p_3<0,05$

Notes: p1 - the probability of the difference between the control group's indicators depending on the measures; p2 - probability of difference between the indices in patients with a subcompensated stage of the disease relative to the control group; p3 - probability of difference between the indices in patients with decompensated stage of disease relative to the control group.

Table 2

Number of parotid secretion in patients with type 2 diabetes depending on events (M ± m)

Investigated contingent	Measures and amount of secrecy (ml)			
	No stimulation	After stimulation	After oral baths with "Lizomycoid"	After Instillations "Lizomycoid"
Healthy (n=25)	1,72±0,08	1,99±0,05 p_1<0,05	2,03±0,07 p_1<0,05	2,13±0,09 p_1<0,05
Patients with subcompensated stage of disease (n=29)	1,36±0,06 p_2<0,05	1,51±0,04 p_2<0,05	1,42±0,07 p_2<0,05	1,91±0,08 p_2<0,05
Patients with decompensated stage of disease (n = 22)	1,01±0,05 p_3<0,05	1,12±0,03 p_3<0,05	1,18±0,04 p_3<0,05	1,31±0,06 p_3<0,05

Notes: p1 - the probability of the difference between the control group's performance depending on the measure; p2 - probability of difference between the indices in patients with a subcompensated stage of the disease relative to the control group; p3 - probability of difference between the indices in patients with decompensated stage of disease relative to the control group.

1,7 times, respectively. After stimulation, the salivation rate and the amount of parotid secretion increased slightly.

After applying the course of oral trays with "Lizomycoid" within 10 days, the total amount of oral fluid in patients increased by 1.4 and 1.3 times in subcompensated and decompensated stages, respectively. A slight increase in functional activity of parotid glands was revealed, indicating an increase in parotid secretion in all observational groups, but this was more pronounced in the control group of the subjects.

In patients with subcompensated and decompensated stages of type 2 diabetes, after completing the course of instillation of "Lizomycoid" into the duct system of parotid glands, the total amount of oral fluid significantly increased compared with those of the second group, and especially with rising values. The secretory function of the parotid glands, however, increased by 1.4 times in the patients with a subcompensated stage of diabetes, and in 1,3 - with decompensated, indicating a direct potentiating effect on the secretory components of the structure, as compared with the primary examination.

Conclusions. Functional activity of parotid salivary glands in patients with type 2 diabetes mellitus is reduced and depends on the stage of the disease and more pronounced in its decompensation. Compensatory capacity is much higher in the subcompensated stage of diabetes.

Daily instillation into the duct system of the parotid glands "Lizomycoid" during 10 days can increase their secretory function by 1.4 times in patients with subcompensated and 1.2 times with decompensated stages of diabetes mellitus type 2 of moderate severity, which leads to an increase in the total amount of oral fluid.

Prospects for further research. Continuation of the study of the issues regarding the possibility of increasing the secretory activity of large salivary glands in various nosological forms of general-somatic pathology, in particular, type 2 diabetes, will partially alleviate the disturbances of homeostasis in the oral cavity in such patients.

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BIOCHEMICAL SUBSTANTIATION OF ADRENOBLOCKERS COMPLEX FOR TREATMENT OF PERIODONTAL DISEASES IN PATIENTS WITH PSYCHOSOMATIC STRESS

Abstract *In the development of periodontal diseases, the presence of psychological stress in patients is important. This should be taken into account in case of complex treatment of patients with periodontal diseases. To effectively treat periodontal diseases in these patients, it is necessary to experimentally substantiate the effectiveness of the proposed complex of adrenoblockers. Objective: experimentally substantiate the effectiveness of the proposed complex of adrenoblockers for the treatment of periodontal diseases. Methods: To substantiate the effectiveness of the proposed complex of adrenoblockers for the treatment of periodontal diseases, an experimental study was conducted on animals. Adrenaline stress was made in rats by oral application of gel with adrenalin in dose 0,36 mg/kg during 10 days. Lincomycin was introduced with drinking water in dose 60 mg/kg. T he gel of adrenoblocators (zocson + nicergolin and sibason) was introduced by application in dose 0,6 mg/kg. Conents of glucose, triglycerides, total cholesterine and malonic dialdehide (MDA), the activities of urease, lysozyme, elastase and catalase were determined into serum. Results: The conducted experimental studies have shown that the development of adrenalin stress causes in animals to increase the level of elastase, malonic dialdehyde. At the same time, the activity of catalase, antioxidant-prooxidative index decreases. The adrenoblocator gel reduced activity urease and content MDA, but raised activity catalase and antioxidant-prooxidative index. Conclusions. Oral application of gel with adrenoblocators made antidysbiotic action more then quertulyne, but yielded in antiinflammation and antioxidative actions to quertulyne after common introduce adrenaline and lincomycin. Thus, application of a gel with adrenoblockers produces an anti-inflammatory effect, but more definitely normalizes the processes of peroxidation of lipids.*
Keywords: *periodontal diseases, adrenaline stress, adrenoblocator, inflammation, antioxidant.*

Introduction. To date, periodontal disease is the most important problem in modern dentistry due to their significant distribution and treatment difficulties [4, 5, 12, 21, 22, 28].

In recent years, interest in neurogenic etiological factors, periodontal diseases, especially psychological stress has grown. It is shown that under the influence of chronic stress we see accelerated development of periodontal diseases, in particular generalized periodontitis [1, 23, 25, 26]. In particular, this is important among young people with a significant risk of periodontal disease [7, 20, 30]. It is shown that there is a certain correlation between the level of anxiety and periodontal diseases. All this requires the development of methods of medical correction of the stress situation in patients with periodontal disease.

In order to reduce the negative impact of psycho-emotional stress on the patient's body, a range of medicines for adrenoblockers was proposed: zoxone (0.002 g 1 time per day), nicergoline (0.005 g 3 times a day), sibazon (0.005 g once a day). This group of drugs is also used in other branches of medicine for the treatment of diseases such as arterial hypertension, etc. [2, 3, 11] and for the regulation of metabolic processes [10, 24].

The purpose of the experimental study was a comparative determination of the proposed complex of adrenoblockers on the periodontal tissue in conditions of reproduction in animals of the experimental periodontitis model.

Material and methods of research. For research, the following adrenoblockers were used: zoxon (dokazon modylate produced by the company Zentiva (Czech Republic), nicergoline ("Arterium" by the company "Galichpharm"

(Ukraine) and sibazon (diazepam) manufactured by "Interhim" (Ukraine), of which ex tempore prepared the gel, which was applied to the mucous membrane of the experimental animals.

The first series of experiments was carried out on 18 white rats of the Vistar line, which were divided into three groups. The first one - control, received the application of a gel without any medication. The second group received applications of gel blockers and the third received application of a gel with a control drug- atropine. Animals were withdrawn from the experiment after 30 days by bloodletting under thiopental anesthesia.

In the second series of experiments, the model of adrenalin stress [6, 9-11] was used. The development of a stressful situation is a characteristic change in the organism of animals and tissues of periodontal disease. In particular, the decrease in the activity of catalase and the content of total cholesterol, the activity of lysozyme, an increase in the degree of dysbiosis and the activity of the marker of inflammation elastase. The second series of experiments was performed on 21 white rats of the Vistar line (females, 13 months, live weight 290-330 g). Adrenalin stress was modeled daily by the use of gel containing adrenaline at a dose of 0.36 mg / kg of animal weight and the introduction of lincolicin in drinking water for 10 days. All animals were equally divided into three groups of 7 rats. The first group included animals that simulated only adrenaline stress. Animals of the 2nd (main) group on the background of adrenalin stress received daily gel treatment with proposed blockers (zoxon + nitrogolin + sibazon). The experiment lasted 10 days. Animals of the 3rd (control) group on the background of adrenalin stress received daily applications of a gel with a quartoline. The duration of all drugs in all groups was 10 days

. Euthanasia of rats was performed on the 11th day under thiopental anesthesia (20 mg / kg) by total bloodletting from the heart.

In serum, blood glucose [8], triglycerides [27], total cholesterol [27], malonic dialdehyde (MDA) [14, 19], urease activity [18], lysozyme [15, 16, 18], elastase [14, 19] and catalase [14, 19]. According to the ratio of relative activity of urease and lysozyme, the degree of dysbiosis according to Levitsky [15, 16, 18] was calculated, and according to the ratio of activity of catalase and the content of MDA, the antioxidant-prooxidant index of API [14, 19].

The activity of alkaline (LF) and acidic (KF) phosphatase [15-18], calcium content [15-18] and Lowry protein [15-18]) was determined in bone marrow homogenate. The mineralization index (MI) [15-18] was determined by the ratio of phosphatase activity (LF / KF), and the degree of mineralization (SM) was determined by the ratio of calcium and protein content [15-18]. The results were processed using standard statistical methods [13, 29].

Research results. Table 1 shows the results of determination in the gum level of markers of inflammation: elastase and MDA. From these data it is clear that adrenoblockers do not significantly affect the level of markers of inflammation, in contrast to atropine, which significantly increased the level of both markers: elastase by 35% and MDA by 25%.

Table 2 shows activity in the gums of urease and lysozyme. It is seen that blockers (and adrenoblockers, and atropine) do not significantly affect the activity of urease (atropine only shows a tendency to increase). At the same time, all blockers significantly increase the activity of lysozyme: adrenal blockers by 56%, and atropine by 111%. As a result of this oral applications and adrenoblockers, and atropine significantly reduce the degree of dysbiosis.

Table 3 presents the results of the determination of catalase activity and AII index in the gums. From these data it is seen that adrenoblockers significantly reduce the activity of catalase by 24%, whereas atropine practically

Table 1

Effect of adrenoblockers on the level of inflammation markers in the gums of rats (M±m)

№№ pp	Groups	Elastase, ukat/kg	MDA, mmol / kg
1	Control	32,5±3,9	22,6±1,2
2	Adrenoblockers	32,8±4,9 p>0,8	19,2±1,9 p>0,05
3	Atropine	43,9±3,5 p<0,05; p_1>0,05	28,2±2,0 p<0,05; p_1<0,015

Notes: p – compared to gr. 1; p_1 – compared with gr. 2.

Table 2

Effect of adrenoblockers on the activity of urease and lysozyme in the gums of rats (M±m)

№№ pp	Groups	Urease, ukat/kg	Lysozyme, unit / kg
1	Control	2,07±0,19	233±40
2	Adrenoblockers	1,97±0,12 p>0,3	364±49 p<0,05
3	Atropine	1,51±0,26 p>0,05; p_1>0,05	492±7 p<0,01; p_1<0,05

Notes: p – compared to gr. 1; p1 – compared with gr. 2

Table 3

Effect of adrenoblockers on the level of catalase and API index in the gums of rats (M±m)

№№ pp	Groups	Catalase, ukat/kg	API
1	Control	7,2±0,1	3,1±0,6
2	Adrenoblockers	5,5±0,4 p<0,01	2,9±0,2 p>0,6
3	Atropine	6,9±0,2 p>0,05; p_1<0,05	2,4±0,3 p>0,1; p_1>0,05

Notes: p – compared to gr. 1; p1 – compared with gr. 2

does not affect the activity of catalase. The API index does not change much after blockers.

In rats with adrenaline stress, an increase in glucose levels (to 7.46 ± 0.3 mmol / l), triglycerides (to 1.42 ± 0.1 mmol/l) and cholesterol (to 1.56 ± 0.08 mmol / l).

Application of gel with adrenoblockers in the rats of the main group causes a certain decrease in these parameters: glucose up to 7.63 ą 0.41 mmol / l, triglycerides up to 1.25 ą 0.37 mmol / l and cholesterol up to 1.85 ± 0.11 mmol / l In animals of the control group there was a similar decrease in these parameters: glucose to 7.15 ± 0.22 mmol / l, triglycerides - to 1.03 ± 0.09 mmol / l and cholesterol - to 1.90 ± 0.05 mmol / l . There was no statistically significant difference between the data of animals of the 2nd and 3rd groups (p> 0.05).

In rats with adrenaline stress, an increase in the marker of microbial contamination of urease (to 1.40 ± 0.14 nkat / l), a decrease in the level of protection - lysozyme (up to 63 ± 3 units / l) and an increase in the level of dysbiosis to 1.81 ± 0 , 22 units. Gel applications with blockers reduce the urease activity to 0.66 ± 0.21 nk / l and increase lysozyme levels to 73 ± 6 units / l. This leads to a significant reduction in the degree of dysbiosis - to 0.74 ± 0.20 units.

The development of adrenaline stress causes in animals changes in inflammation (elastase) and peroxidation (malonic dialdehyde - MDA) in animals. In particular, the level of elastase increases to 138 ± 10,4 ucat / l, and the content of MDA increases to 1.06 ± 0.06 mmol / l. Gel applications with adrenoblockers result in animals of the 2nd group to a significant decrease in these parameters: elastase to 112.4 ± 12.0 ucat/l and the MDA content to 0.90 ± 0.02 mmol / l.

Discussion. Studies have shown that adrenoblockers activate in gums lysozyme, reduce the degree of dysbiosis and the activity of catalase, increase the mineralization activity of periodontal bone tissue.

Thus, application of a gel with adrenoblockers produces an anti-inflammatory effect, but more definitely normalizes the processes of peroxidation of lipids.

Conclusions. The complex of adrenoblockers (zoxon + sibazon + nitsergolin) produces antidisbiotic, anti-inflammatory and parodontoprotective effects, as well as increases the level of the MI index.

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TREATMENT OF GENERALIZED PARODONTITIS IN PATIENTS WITH PREDOMINANCE OF THE SYMPATHETIC NERVOUS SYSTEM

Abstract. *In the pathogenesis of generalized periodontitis, a significant place belongs to a variety of common diseases. In recent years, interest has increased in the study of the peculiarities of the influence of the autonomic nervous system on the development of generalized periodontitis. Some features of the course of various pathological conditions are noted, depending on the state of the autonomic nervous system of the patient, which must be taken into account when treating them. In view of this, a medical treatment scheme for generalized periodontitis was proposed in patients with a predominance of the sympathetic vegetative nervous system. Aim: Determination of the clinical efficacy of the proposed complex treatment of generalized periodontitis of acute and chronic course in patients with predominance of the sympathetic nervous system. Materials and methods. For this study, 55 patients were selected for generalized periodontitis with a predominance of the sympathetic nervous system. Drug treatment was performed using the proposed premedication. A comprehensive examination of the state of periodontal tissues of patients before and after treatment was performed. To evaluate the clinical efficacy of the treatment, the Schiller-Pisarev sample (1962), the PMA index for C. Parma (1961), the Fedorov-Volodkin's hygienic index (1978), and the Kulazhenko vacuum test (1961) were used. Results. It was found that the inclusion of the proposed premedication in the complex therapy of patients with generalized periodontitis can effectively suppress the degenerative-inflammatory process in the periodontal tissues. This confirms the decrease in the PMA index, an increase in the time of hematoma formation during a vacuum test by Kulazhenko, and an improvement in the level of oral hygiene. Conclusions. The application of the proposed premedication can improve the effectiveness of treatment of generalized periodontitis in patients with predominance of the sympathetic nervous system.*
Keywords: *generalized periodontitis, patients with predominance of the sympathetic nervous system.*

Introduction. Treatment of patients with generalized periodontitis should be carried out in a complex manner, depending on the peculiarities of the course and the clinical picture of the disease. In this case, the general condition of the body of patients must be taken into account, which has a significant impact on the course of the disease and the outcome of treatment. Development of periodontal diseases quite often determines the patient's general-somatic diseases of various organs and systems [10, 11, 13, 16, 18, 19]. It should take into account the influence on the development of these diseases and in the future on the generalized periodontal state of the autonomic nervous system. Depending on the state of the autonomic nervous system, a different course of these general-somatic diseases is noted, which must be taken into account when treating generalized periodontitis [1, 5, 18, 19, 21].

Thus, the determination of the state of the autonomic nervous system in patients with generalized periodontitis is of great importance for the development of the most effective methods of treatment for their periodontal diseases [1, 18, 19, 21]. This is especially important in the case of an acute course of generalized periodontitis, since in this course of the disease, the general condition of the patient's body is strongly influenced. It should also take into account the integrative role of the autonomic nervous system on the vascular and nervous systems of periodontal tissues [18, 21]. Achieving the balance of sympathic parasympathetic relationships (by increasing parasympathetic activity in patients with sympathetic tonic type) can improve blood circulation [11, 15]. To achieve this goal and increase the efficiency of patients with generalized periodontal we have developed certain schemes for the medical treatment of patients with generalized periodontitis with different types of autonomic nervous system. In particular, in this study the features of the medical treatment of generalized periodontitis I degree in patients with a predominance of the sympathetic nervous system (chronic and acute course) are presented.

Objective: to determinat of clinical efficacy of

the proposed complex treatment of patients with generalized periodontitis of acute and chronic course in the presence of their predominance of the sympathetic nervous system.

Material and methods of research. This clinical study was conducted on two groups of patients with generalized periodontitis. The first group consisted of 20 patients with an acute course of generalized periodontitis I degree and prevalence of sympathetic nervous system in them, aged 25-45 years. Among them there were 14 (70,0%) women and 6 (30,0%) men. These patients formed the IA (main) study group. For the normalization of the state of their autonomic nervous system, a developed scheme of medical therapy was used (Patent for Utility Model No. 115084, Method of treatment for patients with generalized periodontitis of acute course in which the activity of the sympathetic department of the autonomic nervous system prevails, dated March 27, 2017). Evaluation of the state of the autonomic nervous system was carried out by determining the Kerdo index [9].

For this purpose, for the medical preparation before each visit to dentistry patients are assigned:

"Anaprilin" 0.01 g - 1 tablet 2 times a day, tincture of valerianum 25 drops 3 times a day and "Doxazosin" 0,001 g - 1 tablet 1 time per day, as well as the fact that after a dental intervention is prescribed course of 3-5 days: "Ibuprofen" 0.2 g - 2 tablets 3 times a day, tincture of valerian 20 drops 3 times a day, "Anaprilin" 0.01 g - 1 tablet 4 times a day and "Doxazosin "0,001 g - 1 tablet 1 time per day.

Control (IB) group consisted of 12 patients with acute course of generalized periodontitis, I degree with predominance of sympathetic nervous system. Treatment of periodontal disease in them was carried out by generally accepted methods in accordance with the treatment protocols approved by the Ministry of Health of Ukraine in 2004.

The second (2A main) group was 25 patients with generalized chronic periodontitis with a predominance of the sympathetic nervous system, aged 25-45 years. Among them there were 17 (68,0%) women and 8 (32,0%) men. These patients were prescribed the developed scheme of medical preparation (Patent of Ukraine to utility model number 115083, dated 27.03.2017).

Before each visit to the dentist, they were given a general medical training course for two days:

"Anaprilin" 0.01 g - 1 tablet 2 times a day, tincture of valerian 25 drops 3 times a day. After a dental intervention, they were given a course of 3 days: Ibuprofen 0.2 g - 2 tablets 3 times a day, tincture of valerian 20 drops 3 times a day, "Anaprilin" 0.01 g - 1 tablet 3 times per day.

The control group (2B) consisted of 12 patients with generalized periodontitis with a predominance of the sympathetic nervous system. Treatment of periodontal disease was carried out in accordance with generally accepted methods (in accordance with the treatment protocols approved by the Ministry of Health of Ukraine in 2004).

Before and after treatment, all patients were screened for periodontal tissues. The severity of the inflammatory process in the gums was evaluated using the Silness J. index, Löe H (1964), the Schiller-Pisarev (1962) and the PMMA index for C. Parma (1961). The hygienic state of the patient's oral cavity was determined using the hygienic index of Fedorov-Volodkin (1978). The state of permeability of the vessels of the gums was evaluated using a vacuum test for Kulazhenko (1961) [6, 12, 17, 20, 22]. For the diagnosis of periodontal disease, the classification of periodontal diseases by M.F. Danilevsky [3] was used. The obtained results were processed by statistical methods using Styuden's personal computers [14].

Local treatment of both groups of patients with generalized periodontitis was carried out according to the generally accepted scheme. For antiseptic rinses a 0.5% solution of chlorhexidine bigluconate and benzhydamin hydrochloride (Tantum Verde®) [2, 4, 7, 8] was used. This drug has a local anti-edema and antibacterial effect.

During local treatment, all local stimuli of periodontal tissues were thoroughly removed: dental stones, poor quality fillings, sharp edges of teeth, etc. In the case of acute course of generalized periodontitis, for the reduction of secretions from periodontal pockets, applications and instillations in periodontal pockets of preparations of proteolytic enzymes with antibiotics were used. As anti-inflammatory therapy, paste was used with non-steroidal anti-inflammatory drugs (mefenamine sodium salt, etc.). To suppress the microflora of periodontal pockets antibacterial preparations were used in accordance with the composition of the microflora of periodontal pockets.

Patients in the main group, before each visit to the dentist and appropriate dental intervention, were prescribed medication to normalize the

state of the autonomic nervous system in accordance with the proposed scheme.

Research results. The use of the proposed scheme of medical preparation allowed to significantly reduce the negative reactions of patients to medical interventions. Patients noticed a more calm response to dental manipulations, a rapid decrease in pain in the gums and secretions from periodontal pockets. In patients of the first main group with an acute course of generalized periodontitis, a significant improvement in the state of periodontal tissues was noted in all 20 (100.0%) patients.

Improved hygienic state of the oral cavity as evidenced by a decrease in the hygienic index of 148.69% from 2.86 ± 0.38 to 1.15 ± 0.35. In 18 (90.0%) patients, the level of inflammation in the gums decreased: the index of PMA decreased by 166.12%: from 48.7 ± 0.85% to 18.3 ± 0.67%. The time of the formation of vacuum hematomas increased from 11,7 ± 1,8 s to 23,5 ± 1,9 s. This indicated an improvement in the state of periodontal vessels. The average treatment period for patients in this group amounted to 4.1 visits to the dentist.

In the control group of patients with acute generalized periodontitis, improvement in the periodontal condition was noted in 9 (75.0%) patients. To achieve such an effective treatment result, an average of 6.5 visits to the dentist's patients was required. Also, the level of inflammation in periodontal tissues decreased: the Schiller-Pisarev test was negative in 8 (66.67.0%) patients, the Fedorov-Volodkin's hygienic index was 1.67 ± 0.3 (decrease by 65.87%), the PMA index 24.3 ± 0.4% (decrease by 92.18%). The level of vascular resistance of the gums was increased to 17.7 ± 1.5 seconds.

Thus, in both groups of examined patients with acute generalized periodontitis, significant improvement was observed in the roots of hygiene of the oral cavity, reducing the level of inflammation in the periodontal tissues. The result obtained can be considered as a consequence of the use of the proposed medical preparation of patients to compensate for the state of the sympathetic vegetative nervous system in the case of acute course of generalized periodontitis.

The evaluation of treatment outcomes in patients with chronic generalized periodontitis revealed improvement in the periodontal condition in most patients. In particular, the Schiller-Pisarev test was positive in all patients, after treatment it was negative in 23 (92.0%) patients. The level of hygiene of the oral cavity improved: the hygienic index for Fedorov-Volodkin decreased from 2.85 ± 0.35 to 1.22 ± 0.15 (a decrease by 53.2%). The decrease in the level of inflammation in the gums was attributed to the index of PMA from 48,7 ± 0,75% to 21,8 ± 0,45% (decrease by 55,3%). The obtained data testify to the improvement of the state of periodontal tissues in this category of patients.

Improvement of the state of periodontal tissues confirmed the performance of functional tests. The stability of the blood vessels of the gum was elevated: the vacuated hematoma was formed on average by 23.5 ± 2.5 s (before treatment 12.6 ± 1.5 s, improvement by 86.51%).

The conducted research revealed improvement of periodontal condition in 24 (96.0%) patients. Only one patient needed further medical treatment.

In the control group (2B), the improvement of the state of periodontal tissues was noted in 10 (83.3%) of the examined patients. In order to achieve the stabilization of the dystrophic-inflammatory process in the periodontal tissues, patients in this group needed about 6.4 visits to the dentist, which is more than that of the patients in the main group. The Schiller-Pisarev test was positive in 83.3% of patients, the Fedorov-Volodkin's hygienic index was 1.33 ± 0.3, the PMA index was 24.3 ± 0.4% (decrease by 50.1%). The level of vascular gum resistance increased - vacuum hematoma was formed in 17.5 sec. (Improvement by 38.89%).

Discussion. The conducted research testifies to the positive influence of the proposed scheme of medication therapy. Clinical examination of patients with acute and chronic course of generalized periodontitis of the main group with a predominance of the sympathetic vegetative nervous system after a comprehensive treatment showed a significant reduction in inflammation in periodontal tissues.

Conclusions. Thus, the proposed scheme of medical treatment and the inclusion in the complex therapy of the proposed medical preparation can achieve significant effectiveness of treatment of patients with generalized periodontitis in patients with predominance of the sympathetic nervous system.

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CLINICAL AND LABORATORY MANIFESTATIONS OF TOXOCAROSIS AND ANTI-EPIDEMIC MEASURES OF ITS PREVENTION

Abstract. *A definite regularity is established between the antibody titer to toxocara in the EIA and the clinical and laboratory data. The highest percentage of serologically positive results is observed in children with high eosinophil count and a higher score of clinical symptoms according to Glikman. By analyzing the frequency and nature of clinical and laboratory indicators, it is established that the sum of the main clinical manifestations in patients with toxocarosis (29.19 ± 3.5 points) has been significantly higher than the sum of the indices in children without toxocarosis (7.37 ± 2.4 points). It is proved that the clinical and laboratory data are diverse and not specific. A complex of anti-epidemic measures for the prevention of toxocarosis is given.*
Key words*: toxocarosis, clinic, diagnostics, prevention, children.*

Introduction. Toxocarosis is a parasitic disease (tissue helminthiasis), caused by the migration of ascarides' larvae of dogs (Toxocara canis) in various organs and tissues, which is characterized by a prolonged recurrent course and multiple organ failure of the allergic nature. According to foreign authors, the incidence of toxocarosis has increased by 300% over the past 50 years [17, 18].

The most probable reasons for the prevalence of human larval toxocarosis are progressive growth in the number of dogs, both in cities and in rural areas; high extensive and intensive rates of toxocarosis incidence in dogs; heavy environmental contamination, especially the soil, propagative stages of the pathogen, contributing to the infection of people, especially children [2, 4, 10, 11].

Recently there has been a trend to an increase in the number of toxocarosis diagnosed patients in Ukraine more than 10 times. Annually, the number of people having antibodies to toxocar increases 1.5-2 times and reaches pro 100,000 of population: in 1999 – 0.02; in 2000 - 0.11; in 2001 – 0.7; in 2002 – 0.8; in 2003 – 0.13; in 2004 – 0.13; in 2005 - 0.16; in 2010 - 0.20; in 2015 - 0.23. In Chernivtsy region, intensive incidence rates of toxocarosis are higher than nationwide [5, 6, 9], which can be explained to a certain extent, by more often use of serological diagnostic methods for toxocarosis. Not every region of Ukraine, according to the reports of the sanitary and epidemiological supervision bodies, has the laboratory opportunity to conduct serological studies [1].

The objective of the study is to optimize the principles of diagnosis, improve the methods of treatment and prevention of toxocarosis based on the study of clinical, laboratory and epidemiological features of the invasion in children of Bukovina region.

Materials and methods. The screening of children is carried out through a detailed interview and a thorough examination. Based on the epidemiological history, a set of clinical and laboratory indicators (Glickman score above 20) and EIA results (with a specific antibodies titer of 1: 800 and above) in 369 (42.56%) of 867 examined children aged 1 to 14 years the diagnosis is established: toxocarosis, chronic phase, visceral form. The data obtained make it possible to a certain extent to estimate the prevalence of toxocarosis in children of Chernivtsi region as a whole. The distribution of children infected with toxocarosis is presented in Table 1.

During the research, epidemiological, epizootological, sanitary-helminthological, immunological, serological, clinical-laboratory, biochemical, instrumental methods and methods of statistical processing of the results obtained are used.

Table 1

Children aged 1 to 14 years old, invaded by toxocarosis (distribution by sex and age)

Age (years)	Screened total		Among them (%)	
	persons	%	boys	Girls
1-3	66	17.14	40.90	59.10
4-7	135	35.06	42.96	57.04
8-10	91	23.64	46.15	53.85
11-14	77	20.00	49.35	50.65
Total	369	100.00	45.19	54.81

The study of clinical manifestations in patients with toxocarois is carried out according to the usual method in the dynamics before and after complex anthelmintic therapy and includes carefully collected epidemiological history, subjective and objective data, laboratory data (blood panel, clinical urine analysis, biochemical blood test, feces analysis for helminth eggs and protozoa, immunological status, EIA for toxocarosis) and instrumental research (chest X-ray, electrocardiography, ultrasound, fibrogastroduodenoscopy, rheoencephalography). All patients are obligatory examined by an ophthalmologist and a neurologist. With the collected epidemiological history, special attention is paid to the presence of dog pets in the family, the presence of household plots, the habit of pica (geophagy), and others.

The clinical diagnosis of toxocarosis is based on a combination of clinical symptoms and signs, which are evaluated using a 5-point scoring system of L.T. Glickman [16].

Results. In patients with toxocarosis, clinical manifestations are quite diverse: from asymptomatic to severe forms, which is consistent with the literature data [3, 7, 8, 12, 19].

Before the treatment, the patients had multiple complaints. As can be seen from Table 2, patients most often complained of fatigue (59.90%), headache (30.08%), dizziness (45.25%), a feeling of heaviness and / or pain in the epigastric region (40.92% %) and right hypochondrium (67.48%), dyspeptic disorders in the form of nausea (30.62%), decreased appetite (44.72%), intestinal obstruction (24.66%), diarrhea (21.14%), bloat (41.19%). The manifestations of a dyspeptic syndrome of varying severity were noted in half of those surveyed.

46.61% of patients with toxocarosis had complaints of cough, more often dry, 14.63% of patients complained of choking sensation. Pain in the chest was noted in 15.22% of patients. Pain in the joints, mostly of moderate intensity, was observed in 15.18% of patients. In most cases, the pain was localized in the small joints of the limbs.

Table 2

Complaints and their frequency in children aged 1 to 14 years with toxocarosis

Symptoms	Number of patients	%
Weakness and fatigue	221	59.90
Sleep disorders	44	11.92
Irritability, emotional lability	67	18.16
Headache	111	30.08
Faintness	167	45.25
Heartache	35	9.49
Feeling of heaviness and pain in the right hypochondrium	249	67.48
Pain in the left hypochondrium	30	8.13
Epigastric discomfort	151	40.92
Sickliness	113	30.62
Regurgitation, epigastric burning	212	57.45
Bitter taste in mouth	197	53.39
Bloat	152	41.19
Decreased appetite	165	44.72
Weight loss	135	36.58
Intestinal obstruction	91	24.66
Diarrhea	78	21.14
Skin itch	109	29.53
Skin rash	165	44.72
Joint and muscular pain	56	15.18
Coughing	172	46.61
Choking sensation	54	14.63
Complaints are absent	32	8.67

On examination (Table 3), 84.25% of patients had pale skin, 14.36% had subicteric sclerae, in 44.72% of patients disease was accompanied by a different type of recurring skin rash. Elements of the rash had a maculopapular character and were localized on the trunk or on the trunk and upper limbs simultaneously. The increase in body temperature was more often observed in 55.28% of patients, the temperature rose usually in the evening, less often in the day, more often subfebrile, less often febrile, accompanied by a slight chill.

Objectively, 196 (53.12%) children had local pain in the right hypochondrium and / or in the region of the projection of the gallbladder with irradiation in the right shoulder, neck, under the shoulder and in the lumbar region. In 45.53% of patients, limited pain during percussion and palpation was determined predominantly in the epigastric area, less frequently (22.49%) around the omphalos. The plaqued tongue was observed in 33.88% of patients.

In the right hypochondrium, the liver was palpatory determined at the edges of the costal arch in 29.27% of the patients, and in 70.73%, the lower edge of the liver overlaped the edge of the costal arch by 2-3 cm. When palpated, the liver was thickened, smooth, often tense. An increase in the size of the spleen (splenomegaly) was noted in 11.11% of children.

In the lungs with auscultation, harsh breathing was determined in 181 (49.05%) patients, suppressed breath sounds in 45 (12.19%) patients and dry rales in 54 (14.63%).

As to the lesions of the urinary and reproductive systems, no objective symptomatology was revealed.

Focused abdominal sonogram in 61.3% of patients with complaints of pain in the right hypochondrium revealed signs of chronic cholecystitis, in 42.9% of patients, hepatocholecystitis, cholecystopancreatitis, hepatitis. In 20 (5.42%) patients it revealed splenomegaly and in one, signs of gastroduodenitis. With fibroadastroduodenoscopy 43 (11,65%) patients showed signs of gastroduodenopathy.

Table 3

Objective data and their frequency in children aged 1 to 14 years with toxocarosis

Symptom	Patients	%
Pale skin	311	84.25
Subicteric sclerae	53	14.36
Skin rash	165	44.72
Body temperature increase	204	55.28
Lymphadenopathy	352	95.39
Plaqued tongue	125	33.88
Local pain in the right hypochondrium	196	53.12
Hepatomegaly	261	70.73
Splenomegaly	41	11.11
Epigastric pain	168	45.53
Pain around the omphalos	83	22.49
Muffled heart tones	32	8.67
Harsh breathing	181	49.05
Suppressed breath sounds	45	12.19
Dry rales	54	14.63
Excessive sweating	121	32.79
Sweaty hands	217	58.81

Dynamic long-term monitoring of patients allowed to summarize the obtained subjective and objective data, and highlight the main, the most common clinical syndromes and symptoms.

In analyzing the frequency and nature of clinical and laboratory manifestations, each child was found to have a clinical-laboratory score (according to Glikman) ranging from 24 to 37 points, and an average of 29.19 ± 3.5 points (Table 4).

One of the most common syndromes (71.84% of patients), together with general astenization and recurrent fever, was abdominal pain syndrome caused by pain in the upper abdomen, which, as a rule, preceded other clinical manifestations and predominated throughout the disease. Pain in the right hypochondrium, in the epigastrium, and in the left hypochondrium, could be different in strength and character from weak and / or moderately pronounced, dull, wearing, to constant, sharply expressed, with irradiation. Pain has often been combined with various dyspeptic manifestations in more than a half of the patients. Relevant data of such clinical manifestations are also reported by other authors [12, 15].

In 48.27% patients, there was a pulmonary syndrome. On the background of subfebrile or, less often, febrile temperature, the patients had cough, choking, chest pain. X-ray in 50.94% of patients determined the increased pulmonary vascularity due to perivascular and peribronchial indurations, infiltrative changes.

Hepatobiliary syndrome was detected in 69.34% of patients with toxocarosis, and in 11.11% of patients it was accompanied by splenomegaly.

Neurological disorders of varying severity were observed in 72.37% of patients, which clinically manifested themselves as a headache, occurring more often by the end of the day and / or after overexertion, increased fatigue and irritability. In 41.7% of patients, the syndrome of angioneurosis was revealed, which manifested itself in the

Table 4

Changes in clinical and laboratory scores in children aged 1 to 14 years with toxocarosis

Score	Changes rate (%) by age (years)			
	1-3 (n=66)	4-7 (n=135)	8-10 (n=91)	11-14 (n=77)
Eosinophilia	100.00	100.00	100.00	100.00
Leukocytosis	80.30	93.33	86.81	80.51
ESR acceleration	93.93	90.37	96.70	93.50
Hypergammaglobulinemia	96.95	100.00	100.00	93.50
Hypoalbuminenia	92.42	97.04	96.70	76.62
Anaemia	87.88	87.41	86.81	80.51
Recurrent fever	50.00	52.59	52.74	67.53
Pulmonary syndrome	59.09	40.00	47.25	46.75
X-ray signs of pulmonary involvement	53.03	47.40	52.74	53.24
Hepatomegaly	60.61	76.29	70.32	70.12
Abdominal syndrome	62.12	80.00	72.52	72.72
Neurological disorders	66.66	82.96	73.62	66.23
Skin manifestations	53.03	44.44	39.56	44.15
Lymphadenopathy	90.91	100.00	90.10	97.40
Total Glickman score	100.00	100.00	100.00	100.00

disorders of vegetative regulation and vegetative instability, which evidences a decrease in the adaptive capabilities of patients.

Rheoencephalography showed a tendency to vascular tone increase, mainly in the vertebrobasilar system, venous outflow disorder, brain congestion.

Symptom complex of toxocarosis eventually led to disorders in the emotional sphere, that is, emotional disturbances of a secondary nature. Changes in the emotional sphere were manifested by various forms of neurasthenic syndrome (cyclothymia, asthenophobic reactions, asthenohypochondrical reactions), as well as hysterical syndrome and neurotic reactions.

Study of laboratory parameters showed that eosinophilia (100%), leukocytosis (80.30-93.33%), accelerated ESR (90.37-96.70%), anaemia (80.51-87.88%), hypergammaglobulinemia (93.50-100.00%), hypoalbuminemia (76.62-97.04%) are characteristic to children with toxocarosis. Similar clinical and laboratory studies were conducted in children aged 1-14 years without toxocarosis, who were examined and treated at the department of somatopathy of the regional clinical child hospital.

A comparative analysis of the frequency of the main clinical manifestations showed (Fig. 1) that in children with toxocarosis recurrent fever, pulmonary syndrome, lymphadenopathy occurred 2.5 times more frequently than in children without toxocarosis ($P < 0.01$). Abdominal syndrome, neurological disorders, hepatomegaly, skin manifestations were also more often observed in patients with toxocarosis than in children without toxocarosis, but only 1.2-1.3 times more frequently.

The most significant differences are found between some laboratory data (Fig. 2), which in patients with toxocarosis are 4-8 times higher than in children without toxocarosis.

Only the factor of ESR was not significantly

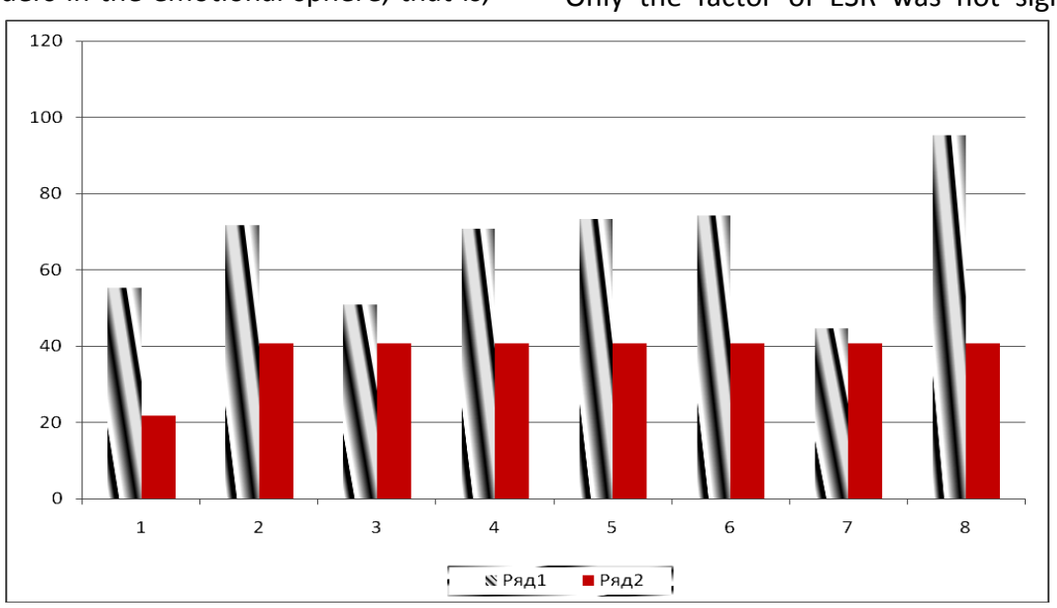

Fig. 1. Comparative frequency of changes (%) of some clinical data in children aged 1 to 14 years with toxocarosis (row 1) and without it (row 2). Legend: row 1 - children with toxocarosis; row 2 - children without toxocariasis. 1 - fever 2 - pulmonary syndrome 3 – X-ray signs of pulmonary involvement; 4 - hepatomegaly 5 - abdominal syndrome; 6 - neurological disorders; 7 - skin manifestations; 8 - lymphadenopathy.

different. In this case, not only the difference in the frequency of changes in some laboratory parameters was revealed, but also in the degree of their expression. Especially it concerned such diagnostically important parameters as eosinophilia and leukocytosis. Thus, eosinophilia was observed in all patients with toxocarosis, and only in 19.88% of patients without toxocarosis. But, as can be seen from Table 5, only in 103 (20.60%) patients without toxocarosis, eosinophilia did not exceed 20%, and in the remaining 395 children the number of eosinophils was 2-10%. At the same time, in 347 patients (94.04%) with toxocarosis the number of eosinophils was from 21% to 50%, and only in 22 (5.96%) was 11-20%.

Leukocytosis in peripheral blood with toxocarosis was observed 8 times more frequently than in patients without toxocariasis (Table 6). As can be seen from the table, more than a half of patients (58.84%) without toxocarosis had the level of white blood cells (WBC) within normal limits, and 30.32% of children in this group had leukopenia.

Thus, the analysis of the frequency and nature of clinical and laboratory factors made it possible to establish that the sum of the main clinical manifestations (according to Glikman) in patients with toxocarosis (29.19 ± 3.5) significantly exceeded the sum of the indices in children without toxocarosis (7.37 ± 2.4). The analysis of the survey results for children with and without toxocarosis at the age of 1-14 years showed that

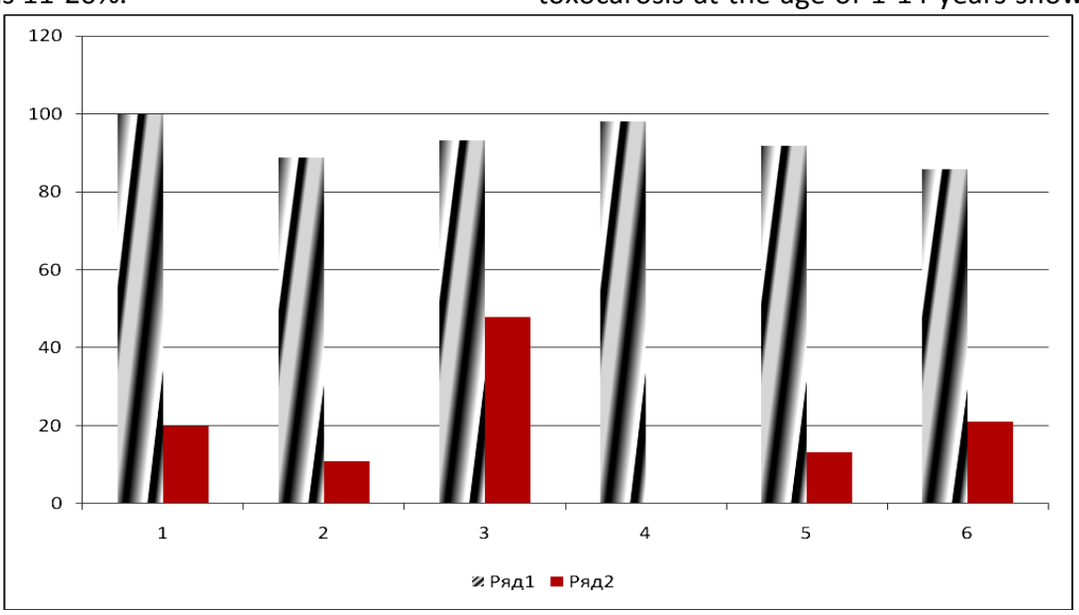

Fig. 2. Comparative frequency of changes (%) of some laboratory data in children aged 1 to 14 years, patients with toxocarosis (row 1) and without it (row 2) Legend: row 1 - children with toxocarosis; row 2 - children without toxocarosis. 1 - eosinophilia; 2 - leukocytosis; 3 - accelerated ESR; 4 - hypergammaglobulinemia; 5 - hypoalbuminemia; 6 - anaemia.

Table 5

Eosinophilia frequency and intensity in children aged 1 to 14 years with and without toxocarosis

Number of eosinophils	Children with toxocarosis		Children without toxocarosis	
	persons	%	persons	%
2-5	–	–	243	48.79
6-10	–	–		
11-20	22	5.6	103	20.69
21-30	134	36,32	–	–
31-40	133	36.04	–	–
41-50 and more	80	21.68	–	–
Total surveyed	369	100.00	498	100.00

Table 6

The frequency and nature of changes in level of WBC in children aged 1 to 14 years with and without toxocarosis

WBC level	Children with toxocarosis		Children without toxocarosis	
	persons	%	persons	%
Leukocytosis (over 10x10^9/l)	320	86.72	54	10.84
Normocytosis (6-10x10^9/l)	49	13.28	293	58.84
Leukopenia (less 9x10^9/l)	–	–	151	30.32
Total surveyed	369	100.00	498	100.00

the changes in clinical and laboratory parameters in patients with toxocarosis are diverse and nonspecific, which is consistent with the literature data [10, 13, 14, 15].

Anti-epidemic measures of toxocarosis prevention should be carried out in several ways.

1. *Activities aimed at the main sources of infestation*.

These include, first and foremost, examination and timely de-worming of dogs. These measures include:

- de-worming of she-dogs during pregnancy;
- de-worming of pups up to six months of age;
- limiting the number of free-ranging dogs;
- the arrangement of special pet relief areas and their hygienic maintenance;
- keeping the public informed about the methods of treating pets, especially dogs.

Veterinary mebendazole, pyrantel, piperazine, albendazole (Albena-C), prazitsid (complex preparation containing praziquatel and pyrantel), asinox plus and others are used for the treatment of dogs.

2. Influence on transmission factors of the invasion.

Health-related measures include:

- washing hands after contact with soil and animals;
- careful washing of greens, berries, vegetables, which can be contaminated with earth;
- protection of sandpits with foil or shields preventing the visits of animals and regular sand replacement in children's sandpits, 3 times a year;
- protection of parks, squares from visiting by animals and their hygienic maintenance, and also sanitary clearing of territories of house-holds, child-care facilities, recreational zones, 3-4 times a year.

3. Influence on human behavior.

Since the majority of the population is not informed about the risk of helminth infection from dogs, public health education is important, which should include an explanation of possible ways of parasite infestation, methods of treating animals, and the need to eliminate fecal contamination from dogs during their walking. For this purpose it is useful to use the experience of some European countries, to protect parks and public gardens from fecal contamination, have special containers for polyethylene bags and containers for the collection of dog feces in the most frequent dog-walking areas.

Prospects for further research. The results of the studies indicate a lack of significant differences in the rates of clinical and laboratory manifestations of toxocarosis in children, depending on age. However, eosinophilia, leukocytosis, hypergammaglobulinemia, hypoalbuminemia, combined with pulmonary syndrome, marked lymphadenopathy in the background of recurrent fever are much more frequent ($P < 0.01$) in children with toxocarosis than without it. As to the frequency of abdominal and hepatobiliary syndromes, skin manifestations and neurological disorders, as well as anemia and accelerated ESR, in children with toxocarosis, these rates are 1.2-1.3 times more frequent, but there is no significant difference ($P > 0.5$) . At the same time, the value of these indicators should be taken into account when making differential diagnostics, as well as for further research.

Of particular relevance are the issues of anti-epidemic measures for the prevention of toxocarosis, since the prevalence of this invasion among the population, especially among children, continues to grow rapidly. In our opinion, the reasons for this are certain difficulties in carrying out preventive measures in full and the absence of a sanitary-helminthological surveillance system for environmental objects in Ukraine, which would take into account the specific features of epidemiology of toxocarosis in each specific case.

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INFLUENCE OF OMEGA-3-POLYUNSATURATED FATTY ACIDS OF THE BLOOD AND ADIPOKINES CONTENT IN PATIENTS WITH ARTERIAL HYPERTENSION AND OSTEOARTHROSIS

Abstract. *Coincidence of arterial hypertension and osteoarthrosis, especially at the background of increased body mass index, leads to worse course of pathology. Aim was to investigate whether therapeutic benefit exists for patients with Arterial hypertension (AH), Osteoarthrosis (OA) and their coincidence from omega-3 fatty acid supplementation. 100 patients were investigated, 35 – with AH, 35 – with OA, and 30 – AH + AO. Female: male ratio was 2.5:1, average age 49.6 ± 8.9 years. Average duration of AH – 7.4 ± 3.8 years, clinically II stage and 8.4 ± 4.6 years for OA (2-3 stage by X-ray, no synoviitis). Control measurements were carried out in 22 healthy volunteers without exacerbation of any chronic illnesses or acute ones within 3-months period before study. All groups of patients corresponded average ratio by age and gender. All patients depending on nosology were prescribed standard basic therapy, which included: ACE inhibitors (Lisinopril), in AH, non-steroidal anti-inflammatory remedies (Meloxicam, Ibuprofen, Diclofenac Sodium) + chondroprotectors in OA. Patients demonstrating dyslipidemia were distributed randomly to 2 subgroups: those obtaining statins (Rosuvastatin) only (comparation group) and principal group who got omega-3-polyunsaturated acids (Epadol-Neo) as addition to standard therapy. Epadol-Neo includes Eicosapentaenoic Acid (300 mg), Docosahexaenoic Acid (200 mg), other fatty acids – 498 mg, d-α-tocoferol (2 mg) it was taken by patients in QD regimen, 2 caps per intake during 2 months. Application of omega-3-polyunsaturated acids into treatment schedule is effective in patients with arterial hypertension, osteoarthritis and their co-incidence in relation to hyperlipidaemia correction and favours restoration of natural balance of adipokines at the account of potentiation of effects of basic therapy.*

Key words: *arterial hypertension, osteoarthrtrosis, increased body weight, Leptin, Adiponectin, hyperlipidaemia, omega-3-polyunsaturated fatty acids.*

Introduction. Arterial hypertension (AH), osteoarthrosis (OA) and their combination are economically unprofitable for the state and patients [1]. AG affects at least one third of the able-bodied population of developed countries of the world, but it is one of the key causes of early dislocation and death. The accusation and mutual burden of these diseases have been proved: the longer the hypertension, the more often the patient is diagnosed with the associated OA [1,3]. The full correction of manifestations of these nosologies, prevention of complications and rehabilitation without unwanted phenomena is a priority direction of the report. The use of omega-3-polyunsaturated

fatty acids (PUFAs) is not included in the list of recommendations for evidence-based medicine, but today there is much evidence of their clinical efficacy [2].

Materials and methods. 100 patients were investigated, 35 – with AH, 35 – with OA, and 30 – AH in combination with AO. The research design was based on the type of case-control. The ratio of "female: male" was 2.5: 1, mean age – 49.6 ± 8.9 years. The average duration of hypertension was 7.4 ± 3.8 years, the clinical picture of the disease corresponded to the second stage. The long-standing condition for osteoarthrtosis was 8.4 ± 4.6 years, the clinical picture corresponded to OA of 2-3 stage, without symptoms of synovitis. The examination procedures met the standards of the Helsinki Declaration in the 1983 review.

The control tests were performed in a group of practically healthy persons (n= 22), comparable with patients of other groups by age and gender.

Anthropometric measurements – body weight and height – were measured on the day of blood collection. BMI was determined according to the generally accepted formula; the BMI was considered optimal to 25, and the higher – the index is more than 25 kg/m^2.

Blood for biochemical studies was taken on the first day of the patient's stay in the hospital at about the same time, about 9-10 am in the morning, after 8-12-hour break in the meal. The day before the sampling excluded heavy physical activity, alcohol, greasy food. Biochemical blood tests are performed on the biochemical analyzer "Accent 200" ("Cormay S.A.", Poland).

All patients, depending on nosology, received baseline therapy, which included: for AH – ACE inhibitors (Lisinopril, Enalapril), for OA – non-steroidal anti-inflammatory drugs (Meloxicam, Ibuprofen, Sodium Diclofenac), chondroprotectors (Mucosate, Alflutop). Patients with signs of dislipidemia received hypolipidemic drugs (Rosuvastatin).

Of the hundred surveyed in AH, OA and their combination was created by the random method of two groups, which included an equal number of persons with all variants of the nosology. The comparison group (50 people) received baseline therapy depending on nosology, which included: for AH – ACE inhibitors (Lisinopril), for OA – non-steroidal anti-inflammatory drugs (Meloxicam, Ibuprofen, Diclofenac Sodium), chondroprotectors (Mucosate, Alflutop). Patients with signs of dislipidemia received hypolipidemic drugs (Rosuvastatin). Patients in the main group (50 people) additionally prescribed a drug containing omega-3-PUFAs – Epatol Neo 1 capsule 2 times a day for a period of 2 months as a source of ω-3-PUFA.

The actual processing of the obtained results was carried out using a variational citation analysis. All date were approved statistically with PC Pentium III, standard Excel 2010 software.

Research results. Patients in both groups – comparisons and well-being – overcame 2-course courchemic treatment well, without any undesirable events.

Patients in the control group at the end of the standard course of treatment of their normal pathology revealed a significant improvement of the available indicators of the lipidogram, indicating that the efficacy of the cured treatment was effective. Thus, the level of total cholecterol decreased significantly by 18.9% (from 5.8 ± 0.41 to 4.7 ± 0.32 mmol/L) ($p < 0.05$). The removal of PUFAs has led to a further progressive decrease in total cholecterol in the blood of patients in the standard group (up to 4.4 ± 0.22 mmol/L), which was pre-differentiated from the indicator before treatment, but the difference in comparison with the indicator of the comparison group was not confirmed statistically. The same positive dynamics was observed when analyzing the level of HDL cholesterol after completing the treatment. Thus, the level of HDL in the group of comparisons is 13% (the difference is not confirmed), and 20.5% – in the ordinary group ($P < 0.05$) (Table 1).

The treatment in different ways influenced the level of adiponics – leptin and adiponectin – in patients with AH, OA and their combination. Thus, therapeutic complexes with the use of the standard set of medicines did not change the level of leptin in patients with hypertension with optimal BMI. The tendency to decrease by one third of the given indicator in the usual group for the treatment group was detected, however, it was not confirmed by the citation (Table 2). The combination of AG and OA changes in the treatment process was also found only in patients with excessive body mass: the dynamics in the group did not exclude the comparison, in the normal group prescribed leptin for treatment decreased by 21.9%.

Table 1

Changes of lipidogram under the influence of combined treatment with additional inclusion of PUFA

Indicator/ (one dimension)	Before treatment n=100 (0)	Group of comparisons for treatment n=50 (I)	Main group for treatment n=50 (II)	P (I-0)	P (I-II)
Cholecetin, mmol/L	5,8±0,52	4,9±0,56	4,4±0,50	P<0,05	P>0,05
Lipoproteins of high density, mmol/L	1,46±0,14	1,65±0,21	1,76±0,11	P>0,05	P<0,05
Low density lipoprotein, mmol/L	3,5±0,93	3,2±0,58	2,8±0,52	P>0,05	P>0,05
Lipoproteids are very low glucose, mmol/L	0,58±0,171	0,44±0,152	0,41±0,163	P>0,05	P>0,05
Triglycerides, mmol/L	2,26±0,121	1,82±0,083	1,61±0,111	P<0,05	P<0,05

Notes: n – number of measurements; p_1 – the level of pre-test variables according to the data before treatment; p_2 – is the level of interconnection of the indicators according to the data of the comparison group.

Table 2

Concentration of leptin in the blood in patients with osteoarthrosis, arterial hypertension and their combination with optimal and excessive index of body mass and before treatment

Indicator/ (one dimension)	Results before treatment	Compariso n group	Main group
AH, optimal BMI n = 17	17,9±4,36	16,6±5,86	12,7±4,36
AH, advanced BMI n = 18	49,2±5,48	42,4±1,73	16,5±3,48 P_1<0,05 P_2<0,05
OA, optimal BMI n = 17	16,4±4,87	18,2±1,53	17,3±2,87
OA, advanced BMI n = 18	40,5±4,3	40,6±4,73	34,3±4,3
OA + AH, optimal BMI n = 15	33,0±4,94	32,0±2,63	34,1±4,94
OA + AH, advanced BMI n = 15	55,4±6,62	51,2±3,51	38,6±3,62 P_1<0,05 P_2<0,05

Notes: *n – number of measurements; p_1 – the level of pre-test variables according to the data before treatment; p_2 – is the level of interconnection of the indicators according to the data of the comparison group.*

Even adiponectin was more susceptible to treatment. Positive, statistically significant changes – attribution of the indicator – were recorded in the normal group in comparison with the results of the treatment and with the results obtained in the comparison group, among the patients in each of the subgroups included (isolated over the AH, OA or their combination, independently from the IMT). The most pronounced changes in adiponectin were isolated pathology – AG and OA, in patients with optimal body mass: the rate increased by 44.4% and 54.5%, respectively. A convenient way of assessing the precision of adiponectin in the blood was found in patients with a combined pathology – OA and AG: in them the concentration of it was increased by 84.4% in patients with optimal BMI, and in 2 times in patients with excessive body mass.

Acknowledged the effects of citations of the

regulation of the elevated level of leptin in patients with a metabolic syndrome. Thus, lactate reduced the level of hyperlipidemia by reducing the level of C-reactive protein, LDL-α and LPDH, and total cholecterol by 40-50%. The level of leptin corrected by lovatatum was much higher and the dynamics at the end of the three-month therapeutic course was 20% this year. Simvastatin, due to the inoculation of monotherapy in hyperlipidemic patients, reduced the plasma concentration of the C-reactive protein, proinflammatory cytokines and lipoproteins, and to a lesser extent influenced the administration of leptin [2].

The results we receive are similar: the appointment of standard therapy - baseline therapy of communicable disease and patients – with patients with hypertension, OA or their combination was completely effective against the correction of hyperlipidemias, but did not lead to a complete restoration of the natural relationship of adipocytes, slightly contributing to the desired adiponectin in the sample.

The formal function of omega-3-PUFA is to reduce the synthesis of triglycerides and their transcript of apolipoprotein B in the liver, as well as in the increase of the total glucose and lower lipoprotein excretion in particular.

According to various observations [3-5], ω-3-PUFAs in a number of biological applications or enriched in their activity are able to reduce the levels in the blood of leptin and resiccants, and the level of adiponectin is somewhat elevated. Such a law has been found for ICC patients, non-alcoholic cateo-hepatose. At the same time, in tissues of target organs (liver, fatty tissue), they significantly improve the concentration of matrix RNA, which encode the synthesis of these adipocys.

The regulation of the adopic compounds ω-3-PUFAs significantly reduces the expression of hypertriglyceridemia, in comparison with other gipolipidemic drugs and affects the administration of glucosylated hemoglobin in patients with diabetes mellitus and increases the intake of HDL. The same law was found in the course of the investigations: the inclusion of PUFA in a combined treatment of patients with OA and OA from the adjacent AG revealed additional, in comparison with the effect of the subjects, the hypolipidemic action: led to a decrease in the severity of both hypertriglyceridemia and hyperholesterolemia; It contributed to the renewal of the natural balance of adipocytes: normalized the level of leptin in patients with oesophagitis, hypertension with OA with excessive BMI, and contributed to the addition of adiponectin to all patients in need of treatment [3-5].

Conclusions. Application of PUFA in the combined treatment of patients with OA and OA with the arterial hypertension reveals additional hypolipidaemic conditions, and also helps to restore the natural balance of adipokines: normalizes the level of leptin in patients with osteoarthritis, hypertension with OA with excessive BMI, and helps to increase adipokines in the examined contingent of patients.

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MICROBIOLOGICAL SUBSTANTIATION OF THE OZONE OILS USAGE FOR THE TREATMENT OF PATIENTS WITH CHRONIC APICAL PERIODONTITIS

Abstract. *The efficacy of endodontic treatment of patients with chronic apical periodontitis determines the rational use of antibacterial medicaments. To elimination of the microflora is used various antibacterial drugs. However, they very quickly became insensitive to the conditionally pathogenic root canal microflora. So relevant is the increase of the effectiveness of antibacterial agents. A promising in this regard is a combination of antibacterial medicaments with ozone. Very important is microbiological assessment of effectiveness ozonotherapy of patients with chronic apical periodontitis. Aim. To determine the microbiological comparative antibacterial activity of non-ozonized and ozonized oil "Eugenol" ("VladMiVa", Russia) on the mixed microflora (aerobic type) from root canal teeth of patients with apical periodontitis. Carrying out a comparative assessment of the quality of root canal treatment after mechanical treatment and application of ozone in chronic periodontitis based on microbiological data. Materials and methods. To determine the sensitivity of microorganisms to the medicaments was used modification of the disk-diffusion method. As a test microorganisms were used reference strains and mixed microflora from the root canal teeth of patients with apical periodontitis. Endodontic treatment was performed on 96 patients (98 teeth) with chronic periodontitis. The material for the background microbiological study was taken immediately after opening of the root canal (before processing the canal). Results. Ozonized oil "Eugenol" showed selective antibacterial properties on mixed microflora (aerobic type) and prolonged duration. After a microbiological research of the root canal content, it was found that root canals with chronic periodontitis in 100 % of cases were infected with various microorganisms, including anaerobic ones. In the initial examination, 125 strains of microorganisms were isolated, and after a thorough chemomechanical treatment of root canals, their number was only 35, the percentage of anaerobic microorganisms remained at the same high level and was 40 %. Conclusion. Ozonized oil "Eugenol" showed selective antibacterial properties and prolonged duration. These microbiological results allow usage this medicaments for clinical use in the treatment of chronic apical periodontitis. Using of ozonotherapy for the treatment of chronic periodontitis in 90.7 % of cases we have been disinfected root canals.*

Key words: *ozonated oil "Eugenol", chronic apical periodontitis, root canals, microorganisms, ozonotherapy.*

Introduction. Microbiological studies in the root canals of patients with periodontitis revealed a variety of conditionally pathogenic microflora. Most often, they are representatives of the families Bacteroides, Fuzobacterium, Streptoccocus, Peptostreptoccocus, Lactobacillis, etc. The predominance of anaerobic microorganisms is noted [6, 7, 9].

The main goal of the endodontic treatment of apical periodontitis is to suppress the conditionally pathogenic microflora of the root canal system and prevent its re-infection [13, 27]. Achieving this goal complicates the complex morphology of the root canal system [1, 8] and only mechanical treatment is clearly insufficient [18, 19] For the suppression of conditionally

pathogenic microflora, a large number of various antibacterial preparations have been proposed in the form of solutions for irrigation of the root canal [1, 8, 10]. They should have significant antibacterial properties, but on the other hand, do not damage periapical tissues of the patient [10]. An ideal antibacterial drug for irrigation of the root canal should be bactericidal, nontoxic, harmless to periapical tissues, do not interfere with their regeneration, have a long antimicrobial effect [2-4, 23].

Various antiseptic agents are used to irrigate the root anal system [10, 12, 14, 16, 17]. In recent years, promising treatment in many areas of medicine is ozone therapy. Clinical and laboratory studies of the effectiveness of the use of medical ozone in dentistry in the treatment of foci of chronic infection, in particular periodontitis, indicate a pronounced antibacterial effect of ozone [3, 5, 8, 12-14]. Its application allows to achieve a reduction of pain; suppression of bacterial microflora in the root canal; reduction of inflammatory process in periodontium and stimulation of reparative processes in periapical tissues [9, 11, 21, 24].

In dentistry, ozone is used in three basic forms: ozone-oxygen mixture, ozonized solutions and ozonized oils. Ozonized oils are used to temporarily fill the root canal with the treatment of pulpitis and periodontitis [21, 24].

To substantiate the clinical application and determine the antibacterial effectiveness of various ozonized solutions, microbiological studies were performed.

Objective. Microbiological determination of antibacterial activity of non ozonized and ozonized oil "Eugenol" on the mixed microflora of the root canal of teeth in patients with chronic periodontitis, comparative assessment of the quality of root canal treatment after mechanical treatment and application of ozone in chronic periodontitis based on microbiological data.

Material and methods of research. For the manufacture of ozonized oil, 25 ml of eugenol ("Eugenol" (Vladmiva)) was used which was bubbled (ozonized) with the help of the apparatus "OZON UM-80" (Kharkiv) according to the manufacturer's instructions for 60 minutes at an ozone concentration of 35 mg / Flow 0.5 l / min.

For the microbiological study, a mixed root canal microflora was isolated and cultivated for patients with chronic periodontitis, aged 20-44 years. The material was collected from the root canal by a sterile instrument (pulp extractor), which was placed in a sterile test tube with a semi-rigid tioglycol medium (produced by the FSUE SSCPM, Russia). Tubes with thioglycolic medium were incubated at 37 ° C in a thermostat for 5 days. After the incubation, the relative number of microorganisms was evaluated by the degree of cloudiness of the medium. Subsequently, the isolated blended microflora of the root canal was used similarly to the test strains of microorganisms.

To determine the antimicrobial action of the studied oil samples, the method of "well" [22, 26] was used, which is a kind of disk-diffusion method for determining the sensitivity of microorganisms [20]. The standard test culture of Ecsherihia coli, Staphylococcus aureus, Porphyromonas aeruginosa, Candida albicans was also used for the study.

A standardized inoculum was applied to a petri dish with a nutrient medium (agar containing 5% red blood cells) in a volume of 1-2 ml and evenly distributed, the excess inoculum was removed by pipette. The open cups were dried for 10-15 minutes at room temperature. After that, at the same distance from the edges of the Petri dish, the wells were 6 mm in diameter. For this purpose, steel thin-walled cylinders were installed (internal diameter - 6.0 + 0.1 mm, height - 10.0 + 0.1 mm). After drying, the cylinders were extracted with sterile tweezers and in the resulting wells were ozonized oil "Eugenol" (mark "1") and non-ozonized oil "Eugenol" (mark "2") with a standard loop diameter of 3 mm. Immediately after application, the cups were placed in a thermostat and incubated at 35 ° C. for 24 hours. At the end of the incubation period, the diameter of the growth retardation zone in millimeters was measured. Determination of the diameter of the growth retardation zone (sensitivity of the microflora) was carried out in 1 and 28 days of incubation. Each of the experiments for statistical authenticity was

repeated 5 times.

Statistical analysis of data was carried out in the applied computer programs StatSoftStatistica 10 and MicrosoftOfficeExcel 2010 with the help of variational and one-factor dispersion analyzes [15, 25].

In the clinical part of the study, 96 patients with chronic apical periodontitis were examined and treated. In patients, the material was collected from the root canal for microbiological studies: before the treatment of the canal after the instrumental and medical treatment of the root canal and after the application of ozone.

The results of laboratory and clinical studies were processed by methods of variation statistics [26 Mintser Truhacheva].

Results of the research and their discussion. Indicators of the growth retardation zone of microorganisms cultures (in mm) on the nutrient medium are presented in Table 1, 2.

Table 1

Antimicrobial activity of oil samples after 24 hours of incubation

Samples of oil	Growth region (in mm) of test strains of microorganisms				
	Pseudomonas aeruginosa	Escherichia coli	Staphylococcus aureus	Candida albicans	Змішана мікрофлора
«Eugenol»ozonized	12,0±0,34	7,0±0,14	9,0±0,19	13,0±0,42	11,9±0,35
«Eugenol» non-ozonized	9,0±0,44	9,0±0,44	6,0±0,14	15,0±0,45	11,0±0,24
p	<0,05	<0,05	<0,05	<0,05	<0,05

Note: p – the reliability of the difference between the values of different types of oils

Table 2

Antimicrobial activity of the oil samples after 8 days of incubation

Samples of oil	Growth region (in mm) of test strains of microorganisms				
	Pseudomonas aeruginosa	Escherichia coli	Staphylococcus aureus	Candida albicans	Mixed microflora
«Eugenol» ozonized	Zone of growth retardation is absent	9,0±0,44	7,0±0,15	6,0±0,14	8,5±0,24
«Eugenol» non- ozonized	Zone of growth retardation is absent	6,0±0,14	9,0±0,45	6,0±0,14	7,6±0,22
p	>0,05	<0,05	<0,05	>0,05	<0,05

Note: p – the reliability of the difference between the values of different types of oils

According to the results of the study, Staphilococcus aureus, Escherichia coli, P.aeruginosa, Candida albicans, ozonized and non-ozonized "Evgenol" oils showed a wide range of antimicrobial activity and showed a long antibacterial effect.

Determination of zones of growth retardation of microorganisms after 1 day of incubation showed (Table 1) that the most sensitive to the effect of ozonized oil "Eugenol" were the test strains Candida albicans - a growth retardation zone of 13.0 ± 0.42 mm and Pseudomonas

aeruginosa - the growth retardation zone of which is 12.0 ± 0.34 mm. Less susceptible were strains of Staphylococcus aureus, a growth retardation zone of 9.0 ± 0.19 and Escherichia coli, a growth retardation zone of 7.0 ± 0.14 mm.

Interestingly, the last strain of test microorganisms was more sensitive to neozonized oil "Eugenol" - the growth retardation zone was 9.0 ± 0.44 mm. In all other cases, ozonized oil "Eugenol" produced a significantly better ($p < 0.05$) antibacterial effect compared to non-ozonized oil. The received sizes of zones of growth retardation of microorganisms can be explained by the fact that the oils (in comparison with aqueous solutions) are not sufficiently actively diffused into the nutrient medium. The mixed microflora of the root canal was moderately sensitive to the action of the "Eugenol" oil. The zone of growth retardation of microorganisms under the influence of ozonized oil "Eugenol" was 11,9 ± 0,35 mm, neonozonovoy - 11,0 ± 0,24 mm. The difference is statistically significant (<0.05).

A microbiological study has shown that ozonized oil "Eugenol" has sufficient selective activity in relation to test strains of microorganisms and mixed microflora of the root canal.

Microbiological studies conducted in patients have shown that root canals in patients with chronic periodontitis in 100% of cases are sown with various microorganisms, including anaerobic. In addition, in 50% of cases, the microflora was sown in associations. The results of the study are presented in Table. 3

The associations of streptococci and staphylococci with anaerobic cocci were most often identified. As a rule, in chronic periodontitis in the root canal of teeth are formed such conditions, under which the access to oxygen is sharply limited. Therefore, it is quite obvious that the percentage of allocation of obligate anaerobes is very high. In our study, their number was 34%.

Repeated study of the root canal content in patients was performed after instrumental and drug treatment. The results are presented in table 4.

Table 3

Species composition of microorganisms isolated from the root canal in the initial examination of patients

Types of isolated microorganisms	Number of selected strains	
	abs.	% (relative)
Streptococci	19	15,2
Staphylococci	29	23,2
Lactobacillus	26	20,8
Enterococci	8	6,4
Anaerobic species	43	34,4
Number of selected strains	125	100
Lack of growth of microorganisms	-	-
Number of observations	43	100
Microbial associations	38	88,4
Monoculture	5	11,6

It should be noted that after the chemo-mechanical treatment of the root canal, the picture of the microbial landscape has undergone significant changes. Sharply decreased the total number of isolated strains. If in the initial study, 125 strains (100%) were isolated, then after chemomechanical treatment their number was only 35 (28%), which is 3.5 times less.

We managed to achieve disinfection by 72%.

The third definition of the microflora of the root canal was carried out after the use of ozonotherapy. These data are presented in Table. 5.

Microbial growth was obtained in only four

Table 4

Species composition of microorganisms isolated from the root canal after chemomechanical treatment

Types of isolated microorganisms	Number of selected strains	
	abs.	% (relative)
Streptococci	6	17,1
Staphylococci	7	20,0
Lactobacillus	4	11,4
Enterococci	4	П,4
Anaerobic species	14	40.0
Number of selected strains	35	100
Lack of growth of microorganisms	4	9.3
Number of observations	43	100
Microbial associations	19	54.2
Monoculture	12	34,3

Table 5

Species composition of microorganisms isolated from the root canal after ozonotherapy

Types of isolated microorganisms	Number of selected strains	
	abs.	% (relative)
Streptococci	0	0
Staphylococci	1	25,0
Lactobacillus	0	0
Enterococci	0	0
Anaerobic species	3	75,0
Number of selected strains	4	100
Lack of growth of microorganisms	39	90,7
Number of observations	43	100
Microbial associations	0	0
Monoculture	4	100

cases (4.17%). In three cases (3,12%), the growth of anaerobic species of microorganisms and in one (1,04%) staphylococci were observed. The results of our studies indicate a fairly high ability of ozonotherapy to disinfect the canals. In 90.7% of cases, root canals were disinfected.

Conclusions. Ozonized oil "Eugenol" showed selective antibacterial activity in the aerobic microflora of the root canal, and prolonged duration of action. The obtained microbiological results allow the use of this drug in the treatment of patients with chronic periodontitis.

In chronic periodontitis in the root canal of teeth, associations of streptococci and staphylococci with anaerobic cocci were most often found. In the initial survey 125 strains of microorganisms were isolated, and after a thorough chemomechanical treatment of root canals, their number was only 35, the percentage of anaerobic representatives practically remained at the same high level and was 40%. When using ozonotherapy for the treatment of chronic periodontitis, in 90.7% of cases root canals were disinfected.

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