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Moderne Aspekte der Prophylaxe, Behandlung und Rehabilitation

## Programm Abstracts

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# Programm Abstracts

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## CORRECTION OF TOXIC ENCEPHALOPATHY IN PATIENTS WITH ACUTE ALCOHOL POISONING

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Acute alcohol poisoning is the most common pathology in clinical toxicology. Ethanol and its metabolites have a manifest effect on the internal organs, with the highest concentration in the cerebral cortex, which allows referring them to neurotropic poisons.

One of the most dangerous complications of ethanol intoxication is toxic-hypoxic encephalopathy (THE), which develops as the result of specific and nonspecific mechanisms of brain damage. Specific mechanisms include selective effect of alcohol on the GABAergic, monoaminergic, glutamate system. Nonspecific (universal) mechanisms include disorders of cerebral blood flow, metabolic disorders, free radical oxidation processes, endogenous intoxication and immunosuppression to hypoxia. Therefore, intensive care TSEs should be aimed at reducing toxic load, and the timely correction of universal mechanisms of lesions.

The aim of the study. Examine the effectiveness of rational neuroprotection in complex intensive therapy of toxic hypoxic encephalopathy in patients with acute alcohol poisoning.

Material and methods. We studied 46 patients aged 27-55 years. Patients were divided into 2 groups: I group - 22 patients were treated with a neuroprotective complex including 1. Infusions of rheosorbilac 400 ml 2 times a day from the date of admission within 3 days. 2. Infusions sukcinasol 400 ml 2 times a day for 3 days from the date of admission. 3. Injections of 20% solution of tiotsetam per a dose of 10 ml a day after recovery of consciousness, starting from the second day and till discharge from the hospital. Group II - 24 patients received conventional therapy, which includes fluid resuscitation with crystalloid and colloid solutions, sedation neuroleptics (droperidol) and benzodiazepines (sibazon, dormicum), vitamins B and C, in the maximum therapeutic doses.

Comparability of groups ensures the absence of significant differences in age and severity of the condition (patients younger than 30 and older than 55 years were excluded). Patients underwent a comprehensive examination with the use of instrumental and laboratory methods. Blood alcohol level was determined at admission and in dynamics at 6, 12, 24 hours. The level of consciousness on a scale of Glasgow. During the period of recovery of consciousness was assessed regarding the severity of intellectual disability using a scale MMSE of 10 positions on the 2nd and 5th day.

Results and discussion. Baseline characteristics of all patients show serious violations of homeostasis, occurring as the result of poisoning. Blood ethanol level in both groups

at admission was 3,1 ± 1,4 g / l, and the level of consciousness on a scale of Glasgow was 7,2 ± 1,4 points. The therapeutic effect of neuroprotective complex is estimated at a comparative perspective on the regression of clinical manifestations of the disease, and detoxification - on the degree of reduction of ethanol in the blood. At the background of the therapy, already on the 2nd day in 17 patients of the test group the level of consciousness of 14 ± 1,2 points was restored, in 3 - to 11 ± 1,2 points, in 2-consciousness was 8 points due to a late delivery of patients in the clinic. Reduction of blood ethanol level is already observed after 6 hours on average to 1,6 ± 0,4 g / l, and after 12 hours the concentration decreased to nearly normal - 0,7 ± 0,2 g / l. In the comparison group, the restoration of the level of consciousness on the 2nd day in patients averaged 11 ± 1,0 points which is 1.3 times longer than in the main group, ethanol concentration in the blood after 6 hours was 2,6 ± 0,5 g / l, and after 12 hours 1,3 ± 0,3 g / l, which is 1.6 and 1.8 times higher than in the main group respectively. Study of cognitive function in patients of group I showed a significant improvement in the level of intelligence. Study on the MMSE scale revealed that patients in group I on the 2nd day there is a slight cognitive impairment - 22 ± 1,4 points, and on the 5th cognitive deficits was almost docked and the total score was 28 ± 1,6 points. With regard to control group, the performance of intelligence on the 2nd and 5th day were 1.4 and 1.5 lower than that in the basic group.

Conclusion: The developed scheme of rational neurometabolic therapy improves treatment results due to a significant reduction in the period of recovery of consciousness and cognitive functions.

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## THE ACTION OF ISOLATED FRACTIONS OF RED PEPPER CAPSICUM ANNUUM L. ON THE MITOCHONDRIAL MEGAPORE CHANNEL AND LIPID PEROXIDATION

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Fruit proteins, seed proteins and capsaicinoids fractions were isolated from red pepper of Capsicum annum L. plants family and their effects on mitochondrial megapore channel and lipid peroxidation of rat liver were in vitro studied. Seed proteins did not influence on megapore, however fruit proteins caused opening of megapore and leading to mitochondrial membrane permeabilization. Opening of the megapore causes massive swelling of mitochondria, capsaicinoids fractions inhibited the swelling process of mitochondria and caused the closed state of the megapore. Fruits and seeds protein fractions from red pepper did not reduce the effect of $Fe^{2+}$/ascorbate-induced mitochondrial swelling and has no effect on the accumulation of malondialdehyde

(MDA) in the membranes of mitochondria. Capsaicinoid fraction has a concentration-dependent inhibitory effect on the $Fe^{2+}$/ascorbate-dependent swelling of mitochondria and of lipid peroxidation. Half-maximal inhibitory concentration (IC50) on the swelling of mitochondria fraction was 2 μg/ml. Capsaicinoids fraction prevents the effect of $Fe^{2+}$/ascorbate on mitochondria and reduces the accumulation of MDA in membrane. Complete inhibition of lipid peroxidation was shown at a concentration capsaicinoids of 50 μg/ml. Capsaicinoids has antioxidant properties and have a protective effect on mitochondria, reducing the membrane destructive effects of $Fe^{2+}$/ascorbate. The obtained results showed the presence of different compounds in red pepper differently affecting megapore channel and lipid peroxidation.

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## EFFECT OF A HYPOGLYCEMIC AGENT GLYCORAZMULIN ON THE MITOCHONDRIAL PERMEABILITY TRANSITION PORE AT THE ALLOXAN-INDUCED DIABETES

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The state of mitochondrial permeability transition pore (PTP), respiration and oxidative phosphorylation of rat liver and pancreas mitochondria in alloxan-induced diabetes were studied, considered the ways of correction of detected membrane damages with the use of glycorazmulin, hypoglycemic drug based on mummy and extract of roots and rhizomes of the plant Rhodiola Semenovii A.

It was shown that in the conditions of alloxan-induced diabetes, the rate of swelling of rat liver and pancreas mitochondria is higher than of the healthy ones; this means that PTP of rat liver and pancreas mitochondria is in the open state in pathology. Glycorazmulin recovers PTP to the normal condition, thereby removing the effect of alloxan on mitochondria.

It is also was shown that the rate of respiration of liver and pancreas mitochondria in states $V_3$ and $V_4$ increases during alloxan-induced diabetes, which significantly reduces the respiratory control (RC) and ADP/O coefficients in comparison with control. The findings suggest that uncoupling of respiration and oxidative phosphorylation take place during alloxan-induced diabetes. Glycorazmulin (oral dose is 50 mg/kg of body weight, during 8 days) eliminates the detected functional disorders of rat liver and pancreas mitochondria, probably due to its antioxidant properties.

We have studied the effect of different concentrations of glicorazmulin on the process of lipid peroxidation in the mitochondrial membrane induced by system $Fe^{2+}$/citrate in vitro. Adding $Fe^{2+}$/citrate to the incubation medium induced lipid peroxidation, resulting in disrupted barrier function of mitochondrial membranes and organelles swell compared

to the control. Glicorazmulin under these conditions, since the concentration of 1 μg/ml inhibited the swelling of mitochondria, indicating that inhibition of lipid peroxidation in the membrane and the transition to the closed state of mitochondrial PTP. Effect of the glicorazmulin on lipid peroxidation in the membranes of mitochondria depends on the concentration of the drug, ie, with its increasing its percentage of inhibition becomes higher. The concentration, which causes half-maximal inhibition of lipid peroxidation ($IC_{50}$), for glicorazmulin was 2,80 ± ,15 μg/ml. Similar results determining antioxidant properties of glicorazmulin were obtained in experiments in vitro with rat pancreatic mitochondria.

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## INDICATORS OF ARTERIAL STIFFNESS DURING PHYSIOLOGICALLY PROCEEDING PREGNANCY ACCORDING TO DATA COLLECTED BY THE DAILY MONITORING OF ARTERIAL PRESSURE

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Objectives: to study indicators of vascular stiffness during physiologically proceeding pregnancy using complex oscillometric monitoring of arterial pressure (AP) and indicators of arterial stiffness.

Materials and Methods: The study included 46 women with singleton pregnancies in the first (11-13 weeks.), second (24-26 weeks) and third (34-36 weeks) trimesters. Exclusion criteria were: systolic blood pressure> 140 mm Hg and diastolic blood pressure> 90 mm Hg at the time of screening; cardiovascular disease; chronic hypertonia; diabetes; kidney disease; immune disorders; medication that could affect arterial pressure; birth weight of newborns below the 5th percentile; Pregnancy with large fetus. The surveyed group conducted daily monitoring of blood pressure and heart rate using the apparatus MnSDP-2 BPLab, the software Vasotens (LLC "Peter Telegin", Russia) was used for the analysis of the oscillograms. The following parameters for arterial stiffness were compiled: the transit time of the reflected wave (PWTT), augmentation index - growth of the pulse wave (AIx), arterial stiffness index (ASI), the rate of increase of AP (dPdt), pulse wave velocity in the aorta (PWV), augmentation index of the aorta (AIxao). Statistical analysis was performed using the software Statistica 6.0.

Results: The daily monitoring did not reveal significant differences in the daily average of dPdt, ASI, AIx, AIxao in the course of pregnancy, but the trend goes towards an increase in the third trimester. RWTT daily average was significantly higher in the second trimester of pregnancy compared to the third and reached 164.00 [156.90; 166.00] and 152.90 [146.90; 158.90], respectively, wherein the natural aortic PWV

was decreasing in the second trimester to 7.40 [7.0; 8,0] and increasing in the 3rd to 8.4 [7.50; 8.90], with ($p < 0.05$). The daily average of 75 AIx was significantly lower in the second trimester -68.50 [-77.50; -58.00] vs. -62.50 [-68.50; -51.50] in the first ($p < 0.05$). Most of the parameters that characterize the arterial stiffness did not have significant differences in the dynamics in the time period from the first to the third trimester. However, the obtained average value of dPdt during night increased significantly from the second trimester 642.00 [561.50; 676,00] to the third trimester 690.00 [583.50; 750.00] ($p < 0.05$), however the average RWTT for day and night hours significantly decreased. The analysis of the average PWV for day- and nighttime revealed its increase in the third trimester 8.3 [7.70; 8.85] compared to the second 7.80 [7.25; 8.25] for daytime 7.95 [7.40; 8.95] vs. 7.45 [6.70; 8.30] for nighttime ($p < 0.05$).

Conclusions:

1. Daily monitoring of parameters characterizing the arterial stiffness, possibly using the device BPLab software Vasotens should be conducted.

2. The values of the parameters for arterial stiffness for women with physiologically proceeding pregnancy, depend on the period of gestation. This data can be used to further investigate the role of PWTT, AIx, ASI, dPdt, PWV, AIxao, 75AIx, 75AIao for pregnant women, including the prediction of pre-eclampsia.

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Rolf Graupner
Werner Schüler

## DIE ZUKUNFT DER INFEKTIONSDIAGNOSTIK - KONTROLLE VON BAKTERIENKULTUREN DURCH MESSUNG VOLATILER MARKER AUS DEM HEADSPACE

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Der kulturelle Nachweis eines bakteriellen Befalls ist nach wie vor die einzig beweisende Methode zur Infektionsdiagnostik. Andere Verfahren, wie PCR, können bei schon abgestorbenen Keimen oder nur geringem klinisch nicht relevantem Befall falsch positiv anzeigen und bedürfen oft der kulturellen Bestätigung.

Speziell bei langsam wachsenden Keimen wie Mycobacterium tuberculosis und atypischen Mycobacterien (Mycobacterium avium paratuberculosis (MAP)) dauert eine Kultur 6 bis 8 Wochen zum sicheren Befund. Mit der Ionenbeweglichkeitsspektrometrie ist es möglich, flüchtige Produkte des durch Bakterien im Wirtsorganismus oder auf der Kultur ausgelösten Stoffwechsels sehr frühzeitig und sicher nachzuweisen. Am Beispiel einer MAP-Kultur wurde mit der Methode ein signifikanter Befall schon nach 3 Tagen nachgewiesen.

Die Methode basiert auf der spektrometrischen Messung von volatilen Peaks und einer patentierten Auswertung zur Differenzierung der Stichproben nach dem Auftreten

oder Fehlen von Peaks in den Messungen. Die tatsächliche chemische Identität der Peaks muss dazu nicht bekannt sein. Unbekannte Messungen konnten den vorher differenzierten Lernstichproben mit 100% iger Spezifität zugeordnet werden.

Die Methode ist auch geeignet, einen Keimnachweis aus Ausatemluft, Abstrichen aus Rachen und Nase, Sputum oder anderen biologischen Proben zu sichern (Becher; Buszewski). Andere schnellwachsende Keime wie E. Coli, Staphylococcus aureus u. a. sind auch detektierbar (Steppert 2014). Für noch nicht validierte Erkennung von einem Keim ist eine spezifische Methode mit der selbstlernenden Software jederzeit beim Anwender selbst erstellbar.

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## POINT-OF-CARE DIAGNOSTIK VON KEIMEN IN DER AUSATEMLUFT VON PATIENTEN BEI INFEKTIONSKRANKHEITEN

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Der kulturelle Nachweis eines bakteriellen Befalls ist nach wie vor die einzig beweisende Methode zur Infektionsdiagnostik. Andere Verfahren, wie PCR, können bei schon abgestorbenen Keimen oder nur geringem klinisch nicht relevantem Befall falsch positiv anzeigen und bedürfen generell der kulturellen Bestätigung.

Bei langsam wachsenden Keimen wie Mycobacterium tuberculosis und atypischen Mycobacterien (Mycobacterium avium paratuberculosis (MAP)) dauert eine Kultur 6 bis 8 Wochen zum sicheren Befund, wobei mit positiver Kultur der Keim noch zu differenzieren ist.

Mit der Ionenbeweglichkeitsspektrometrie ist es möglich, flüchtige Produkte des durch Bakterien im Wirtsorganismus oder auf der Kultur ausgelösten Stoffwechsels sehr frühzeitig und sicher nachzuweisen. Die Methode basiert auf der spektrometrischen Messung von volatilen Peaks und einer patentierten Auswertung zur Differenzierung der Stichproben nach dem Auftreten oder Fehlen von Peaks in den Messungen. Die tatsächliche chemische Identität der Peaks muss dazu nicht bekannt sein. Unbekannte Messungen konnten den vorher differenzierten Lernstichproben mit 100% iger Spezifität zugeordnet werden.

Am Beispiel von MAP-Kulturen wurde mit der Methode ein signifikanter Befall schon nach 3-6 Tagen nachgewiesen, mit Möglichkeit der Differenzierung verschiedener Stämme.

Durch Einbeziehung weiterer Cluster ist eine Differenzierung und Sicherung des Ergebnisses möglich.

Die Methode ist auch geeignet, einen Keimnachweis aus Ausatemluft, Abstrichen aus Rachen und Nase, Sputum oder anderen biologischen Proben zu sichern. Andere schnellwachsende Keime wir E. Coli, Staphylococcus aureus u. a. sind auch detektierbar. Der erwartete Vorteil der Methode besteht darin, dass neben einer schnellen Erkennung des Wachstums an sich (Sensitivität) gleichzeitig eine Keimdifferenzierung erfolgen kann (Spezifität).

Für noch nicht validierte Erkennung von einem Keim ist eine spezifische Methode mit der selbstlernenden Software jederzeit beim Anwender selbst erstellbar.

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## STUDY THE DYNAMICS OF SPIROMETRY IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND CORONARY HEART DISEASE

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Chronic obstructive pulmonary disease is a chronic inflammatory disease of the respiratory system with the defeat of the airways and lung parenchyma with the development of emphysema, shown partially reversible airflow obstruction, characterized by progression and growing phenomena of chronic respiratory failure. The basic method for estimating the degree of bronchial obstruction is spirometry.

Many studies have been devoted to dynamics of FEV1 in patients with COPD, but the study of the dynamics of all spirometry is not given due attention. This requires additional observation. In addition, there is information on the relationship between the dynamics of the fall in FEV1 and the frequency of cardio - vascular complications, but these data are rare. Therefore, the aim of our study was to investigate the dynamics of spirometry in patients with COPD and coronary heart disease.

Materials and methods: We examined 39 patients with COPD II-III art. in the acute stage subsides, in conjunction with coronary artery disease (stable exertional angina II-III functional class, arrhythmic variant) who were treated in allergen-pulmonary department. Of these, 23 males and 16 females aged 49 to 75 years. As a control group of 41 patients were taken with COPD II-III century, In acute stage subsides.

Patients of both groups underwent routine laboratory and clinical research methods. Respiratory function was carried out by computer spirometer “Diamand” three times: at baseline and after 12 months. Investigated the following parameters: FEV1, FVC, index Tiffno, PIC, the maximum volume of speed (ISO) 25, MOS50, MOS50. Analysis of the research was conducted by calculating the actual values and comparing them with the calculated values due depending on height, weight, gender, age. To confirm the diagnosis of COPD test was carried out with a bronchodilator (salbutamol).

Results and discussion. Dynamic observation of the main group of patients showed a reduction in all indicators FVD: FEV1 by 6% on average in men and 7% on average in women, forced vital capacity by 7% in men and 9% of women, the index Tiffno 6% for men and 4% in women PIC 4% in men and by 6% in women MOS25 5% in men and by 6% in women MOS50 5% of men and 9% in women MOS75 at 3% men and 7% in women. In the analysis of the data found that in women, the annual decline in ERF is more pronounced than in men. This is probably due to the fact that women initially determined by a higher level of pro-inflammatory interleukin - 8, as compared to men. As is well known interleukin - 8 attracts neutrophils in lung tissue. Smoking increases the levels of IL - 8, which contributes to a significant rise in the number of neutrophils in the airways. This increases the severity of inflammation.

During the ERF in dynamics in the control group (COPD) found annual reduction of all parameters of spirometry, but to a lesser extent than in the study group (COPD and coronary heart disease). Namely, the annual decline in FER was as follows: FEV1 males averaged 4.5% and 5% in women FVC 5% of men and 7% in women index Tiffno 6% of men and 5% in women PIC 3% male and 4% in women MOS25 3% in men and 3.5% in women MOS50 4% in men and by 6% in women MOS50 3% in men and 5% in women.

Conclusion. Thus, it was found that in patients with COPD occurs not only annual decline in FEV1, but all the other parameters of spirometry. In COPD patients with concomitant coronary heart disease annual decline in the ERF is more pronounced than in patients with COPD without CAD. This is because the cardio - vascular disease burden for COPD potentiate inflammation and accelerate the progression of the disease.

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## INFLUENCES OF CORONARY HEART DISEASE ON THE COURSE OF THE CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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The Chronic Obstructive Pulmonary Disease (COPD) is one of the most important problems of health care making the essential contribution to growth of temporary disability, increase in cases of disability and premature mortality. According to World Health Organization, on prevalence among noninfectious diseases of COPD takes the second place in the world and in 2002 I became a cause of death of 2 million 740 thousand patients.

Given the growth in the number of women with COPD, it is necessary in-depth study of features of formation and clinical course of COPD in women compared with

men. Particular attention should be paid to older women, where COPD often occurs in association with diseases of the cardiovascular system, facing the clinical picture to the fore in connection with what COPD is not diagnosed in time.

Objective: To evaluate the impact of the pathology of the cardiovascular system in the course of chronic obstructive pulmonary disease in women older than 60 years.

Materials and Methods: To evaluate the impact of the pathology of the cardiovascular system in the course of chronic obstructive pulmonary disease in older women, we compared three groups of women. In the first group of 21 conditionally healthy women in the second 19 women suffering from chronic obstructive pulmonary disease and a third group consisted of 22 women with chronic obstructive pulmonary disease combined with coronary heart disease. In the comparison group identified a number of features of chronic obstructive pulmonary disease.

Results and discussion. According to the ECG in women identified only signs of right heart failure, such as myocardial hypertrophy of the right atrium, right bundle branch block, and pravogramma. In the group of patients with COPD and arterial hypertension in 51.72% determined by the signs of left ventricular hypertrophy, and 17.24% arrhythmias as single supraventricular arrhythmias. In the group of patients with comorbidity 78.26% had changes characteristic of chronic coronary insufficiency. Supraventricular arrhythmias, incomplete and complete blockade of the left and right bundle branch block, sinuauricular blockade and 1 degree atrioventricular block were recorded in this group to 69.56%.

Conducted by echocardiography revealed a number of features in patients with comorbidity. According to the results of echocardiography in patients with associated pathology revealed pronounced cardiac remodeling - both right and left of its departments.

Characteristic is a greater increase in these parameters in patients with associated pathology. In the group of women with COPD, signs of right heart remodeling. In all groups of patients showed signs of pulmonary hypertension, maximum values which were registered in the group of women with COPD combined with coronary artery disease.

In the group of patients with COPD combined with coronary artery disease was detected significantly lower ejection fraction (40.61%) compared with the control group and patients with COPD.

Conclusions: Thus, the results of echocardiography women with associated pathology revealed pronounced remodeling process - both right and left of its departments. Based on these data, we can conclude that the presence of associated coronary heart disease in older women with chronic obstructive pulmonary disease aggravates the clinical course of COPD worsens the prognosis of the disease leads to remodeling of the heart, plays an important role in the development of a restrictive component of respiratory failure.

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# EFFECTIVE TREATMENT OF DYSLIPIDEMIA IN PATIENT WITH ISCHEMIC HEART DISEASE

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The prevalence of dyslipidemia which could be described as an epidemic continues to grow. Dyslipidemia being one of the major atherosclerotic risk factors, is closely connected with the development of coronary heart disease. Therefore timely identification and adequate correction of lipid metabolism disorders is very important for the prevention of cardiovascular disease. A key role in initiation of atherosclerosis play lipid metabolism disorders. Progression of atherosclerosis can lead to a significant narrowing of the lumen of the arteries and the onset of clinical symptoms of coronary and cerebrovascular insufficiency. This leads to thrombosis and total occlusion - the closure of the arteries. Statin use is a cornerstone in the prevention and treatment of coronary heart disease, stroke and peripheral circulatory disorders. According to the European scientific societies, therapy of patients suffering from atherosclerosis, statins should be undertaken with cholesterol levels above 5 mmol / l or content in the blood low-density lipoprotein above 3 mmol / l.

Purpose of work - study the effect of atorvastatin on manifestations of dyslipidemia and the quality of life in patients with coronary heart disease.

Materials and methods. The study included 48 patients aged 53-67 years with coronary heart disease with manifestations of hypercholesterolemia. The study included general clinical practices and determine the level of blood lipids, total cholesterol and triglycerides. All patients received atorvastatin 40 mg daily in compliance with the cholesterol - lowering diet. The control group consisted of 20 patients of comparable age, which is used in the treatment of a diet without lipid-lowering drugs. The study excluded patients who were identified on echocardiography reduced ejection fraction less than 40%. All patients were analyzed traditional risk factors of coronary artery disease - hypertension, smoking, family history of atherosclerosis, hyperlipidemia.

The Results. After 4 weeks after treatment with atorvastatin 40 mg per day achieved the target lipid levels 36% of patients. Patients also observed a significant reduction of the dynamics of atherogenic lipids in six weeks. In the study group revealed that the majority of patients – 73,6% there was a significant reduction in total cholesterol (6,35 ± 1,1 initially, to 4,43 ± 0,91 mmol / l, $p < 0.01$) decrease LDL (4,13 ± 1,01 initially, to 2,77 ± 0,24 mmol / l, $p < 0.001$). Clinically it is manifested a decrease in the dose received antianginal drugs and increased exercise tolerance. In the control group it was found that in 9 (43.7%) patients experienced a significant decrease in total cholesterol (6,49 ± 0,9

initially to 4,79 ± 0,88 mmol / l, p <0.01) reduction in LDL (4,02 ± 0,21 initially, to 3,12 ± 0,41 mmol / l, p <0.01). And most patients 11 (56.3%), diet alone did not lead to a significant decrease in cholesterol and triglyceride levels.

Conclusion. Statin therapy in diseases of the cardiovascular system pathogenetically justified. Use of atorvastatin in patients with ischemic heart disease and hypercholesterolemia reduces the dose received antianginal drugs, increased exercise tolerance. Atorvastatin 40 mg per day is able to reduce the level of atherogenic lipids in most patients with coronary heart disease and hypercholesterolemia, which corresponds to the modern principles of secondary prevention of atherosclerosis.

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## MARKERS OF ENDOTHELIAL DYSFUNCTION IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION, COMBINED WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Endothelial dysfunction is a prognostic factor risk of death from the cardiovascular reason, in the first place – myocardial infarction (MI). Thus under the impact of heightened cholesterol and low-density lipoproteins level the disorder are happened in nitric oxide system (NO) and inhibition of NO-synthase. Dysfunction of endothelium contributes in vasoconstriction, higher cellular growth, proliferation smooth-muscular cells, accumulating lipids in them, adhesion and aggregation of blood platelets, formation of thrombi in the vessels. Therefore the definition of nitrite-nitrate level give an opportunity to estimate the functional condition of endothelium and prevent the cardiovascular complications in patients with acute MI, combined with non-alcoholic fatty liver disease.

Object – to investigate endothelial function in patients with acute MI with Q-wave combined with hepatic steatosis (HS) or non-alcoholic steatohepatitis (NASH).

Material and methods. 108 patients with acute MI of the left ventricle. Of these, 48 patients were diagnosed with acute MI (group 1, 66,33±1,66 years old); 53 – with acute MI, combined with HS (group 2, 63,74±1,87 years old), and 7 patients – with acute MI, combined with NASH (group 3, 58,86±4,47 years old). The levels of NO metabolites in the blood serum were measured according to the parameters of endothelial function. The level of nitrite anions and nitrate anions was measured spectrophotometrically.

Results and discussion. Content of the stable metabolites NO in serum was increased in all groups as compared with control. In patients with MI nitrite levels increased 2.6-fold (p<0.001) and nitrate levels – 1.3-fold (p<0.001). In combined pathology in group 2 nitrites increased 2.6-fold (p<0.001) and nitrates – 1.3-fold (p<0.001), and in group 3 – threefold (p<0.001) and 1.5-fold (p<0.001). Thus share $NO_2^-$ in general number NO

formed in 1st group 41,7 %, in 2nd group – 40,8 % and in 3rd group– 41,4 %. This in 1,6 times more than in control group. In patients in group 2 the levels of nitric oxide metabolites did not differ from that of group 1. Significant differences in the content of nitrites and nitrates in comparison with patients groups with associated pathology were determined. In the third group of patients, compared with group 2, nitrite levels are 18.9% more ($p<0.01$), and nitrates levels – 16.0 % more ($p<0.05$). Both prior to MI and prior to NASH the aseptic inflammation assists to higher of NO concentration. But significant differences in the content of the stable metabolites NO between the group of patients with combined course of MI and HS and the group of patients with MI were not detected. These are conditioned by absence of the inflammatory reaction at HS. Thereby, in patients with MI and associated pathology are registered the increase of the stable metabolites NO in serum. This, maybe, conditioned with activation of inducible NO-synthase mainly (with the following increase $NO_2^-$) and formation of peroxinitrite, which is changed to $NO_3^-$ for oxidation chiefly. Endothelial dysfunction more expressed under MI, which is associated with NASH. The excess of NO, which is produced by inducible NO-synthase, can reflect the compensatory reaction at an early stage of the pathologic process. It promotes to maintenance of the tissular perfusion and the coronary blood flow. The toxic peroxinitrite generates at the high NO concentration. It leads the cytostatic and cellulotoxic action with the activation of the apoptotic mechanisms in cardiac hystiocytes and liver, destructive process and progress dysfunction of this organs.

Conclusions. Patients with MI combines with HS or NASH had increased levels of stable metabolites of nitric oxide in the blood serum in the most severe endothelial dysfunction in MI, combined with NASH due to aseptic inflammatory reaction.

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## MORPHOFUNCTIONAL CHANGES IN VITAL ORGANS CAUSED BY INTRA-ABDOMINAL HYPERTENSION: EXPERIMENTAL STUDY

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Intra-abdominal hypertension (IAH) is one of the most important problems in modern surgery as it complicates many diseases and in most cases causes the development of multiple organ dysfunction and high mortality among surgical patients.

The aim of work is to detect morphofunctional changes in organs and tissues at different stages of intra-abdominal hypertension by experimental study.

Research material and research methods:

Experimental research was conducted using chinchilla rabbits, males weighing 1,8-2,5 kg. All the animals were mature. All manipulations with the animals were conducted in compliance with the guidelines for the humane care of laboratory animals and the

standards for handling and using laboratory animals. The research was conducted with 4 groups of animals. The first group (n=5) included intact healthy animals. The second group (n=10) was subjected to intra-abdominal hypertension 16-20 mm Hg, the third group (n=10) -21-25 mm Hg and the fourth group (n=10) - above 25 mm Hg.

The increasing intra-abdominal pressure was modelled by inserting a cubical 16G catheter into the abdomen and air injection. The examination of organs and tissues (heart, lungs, liver, small intestine, colon, kidneys) was made using common morphological and histological methods after 4, 6 and 8 hours.

Research results:

Morphological analysis in each group revealed common evidence of microcirculation disturbance in all the organs including the change in vessel diameter (dilatation in most cases), thickening of the vessel wall due to the endothelium swelling, increased permeability, diapedesis of red blood cells, vascular congestion, hardening of small vessels and sludge syndrome. Changes in the tissues were mostly characterized by increased edema, thinning of the muscular layer, myocardial hypertrophy, violation of the structure of cell membranes, signs of lymphocytic and adipose infiltration and impaired architectonics.

The revealed changes progressed from minor to severe at the end of the experiment and the severity of IAP also increased. The most severe disorders were linked to the IAP increasing above 25 mm Hg.

Conclusion:

The results of the experimental research clearly demonstrate that intra-abdominal hypertension causes the disturbance of microcirculation and tissue structure in all the organs, which not only aggravates the basic disease but can also result in polyorganic deficiency. Therefore the surgical tactic must include measures taken to treat the underlying disease and to prevent the development of intra-abdominal hypertension by regular IAP monitoring.

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## GAME KINESITHERAPY – A WAY OF ADAPTATION OF SICK CHILDREN TO ENVIRONMENTAL CONDITIONS

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Kinesitherapy is one of the forms of physical culture (Bubnovskiy, 1998). It includes both the theory, and the technique of the adaptive physical training in which the treatment represents the difficult psychological and pedagogical process proceeding between the patient and the kinesitherapist. As a rule, the kinesitherapy is applied to the treatment and rehabilitation of the musculoskeletal system. However, the idea of the

application of kinesitherapy as an auxiliary method for the treatment of children with disorders in the development of mentality resulted from work with such children and their parents. The method is directed at the improvement of the child's physical health, the removal of the muscular and emotional strain, the improvement of social skills, removal of fears, uneasiness, and at the behavior correction as well.

The peculiarity of the author's method of kinesitherapy is a game form (patent Nr. 78372). The game promotes making of close relations between participants; it defuses tension, alarm, fear before people around, raises one's self-appraisal, allows to check oneself in various situations of communication. The method is applied at the diseases at children and teenagers: autism, speech arrests of development, consequences of perinatal encephalopathies (also at different statokinetics disorders), intellectual backwardness, epilepsy.

The total of the children surveyed and treated by us was 60 people (30 children autists and 30 children with organic injuries of the brain). During the examination, the following features of the influence of game kinesitherapy on the mental health of all children were found. The skills to communicate, showing a direct look, some aspiration to the communication improved in 96,7% of the surveyed children, cognitive abilities – in 80%, the improvement of the speech and speech activity – in 80%, the improvement of the emotional state, the improvement of physical capacities – in 86,7%, an emergence of the functionality in the game, the interest in toys – at 66,7%, the improvement of psychosomatic indicators – at 90%, the improvement of the gait, small motility, coordination of movements – in 20% (the children with cerebral spastic infantile paralysis). When comparing the group of children-autists with a group of children with the organic injuries of the brain it is possible to mark out the following features. Game kinesitherapy has an equal positive influence on all the groups of the surveyed children. For children with autistic disorders socialization under the influence of game kinesitherapy takes place with more evident improvements in the area of communication, cognitive abilities, the speech, the game ability and motility, the orientation in the surrounding space. At children with the organic injury of the brain the rehabilitation in the area of psychosomatic and motility occurs more brightly.

It is possible to draw a conclusion that game kinesitherapy is the universal method of the additional help to the children suffering from the disorders of the autism spectrum and the children with the organic injuries of the brain. The surveyed children showed much better indicators of the mental and physical health for rather a short period of time. The improvement of the sociability of children promotes the faster advance of the children in their educational and pedagogical process. This method can be recommended to the experts who are carrying out the help to the children with special needs.

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## PROBLEM-ORIENTED EDUCATION OF TOP HEALTHCARE EXECUTIVES IN THE CONTEXT OF ENHANCING SATISFACTION WITH THE QUALITY OF MEDICAL CARE

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It is known that the low level of satisfaction with the quality of medical care, patients' complaints and suggestions presents nowadays a global trend and the earlier healthcare administrators start to respond to them as to a quick indication of quality of systems and processes, the earlier these systems and processes can be effectively and integrally improved.

In the context of the concept on continuous improvement of quality of education of top healthcare executives, we have introduced in the teaching process of the Department of Public health at SamGMU a number of innovative interactive methods of teaching. These methods are based on andragogical principals of interaction, activity of the students, obligatory feedback, and accumulation of common knowledge. Moreover, the top priority is seen in training of professionals with a high level of competence and stable professional communicative skills, where a stereotype of achieving success are used instead of a stereotype of avoiding failures and a higher level of legal competence.

As an innovation form of teaching we introduced, there is a practical project seminar "Mastering difficult patients, conflict solutions by means of ethical, legal and social-psychological analysis of complaints and problem situations" with participation of top healthcare executives, chairpersons of ethical commissions, different medical specialists. The following issues are discussed: legal characteristics of the relations occurring in the process of rendering medical services; transition from administrative law to civil law regulation of the conflicts; characteristics of the fundamental health care rights of citizens; legal liability for patients' rights violation; international codex of medical ethics and codex of professional ethics of a medical employee in Samara region.

The second block, which enables to deepen the level of problem-oriented analysis of situations aimed at searching the ways and elaborating coping strategies. Among the strategies are psychological aspects of the personality of a difficult patient and effective communication with him, recognition of a social-psychological scenarios of "profiting" from disease and psychological characteristics of the inner picture of the disease in conflict patients and constructive structuring of a dialogue; analysis of social-psychological components in patients' complaints (search for solutions and elaborating coping strategies of confident actions, which lead to overcoming of difficulties, developing of communicative and emotional competence, psychological expertise and psychological maturity of a doctor.

Of the most interest were technologies for building a personal contact with a patient, psychotechnics of active, empathic listening. Most discussed and meaningful part of the seminar became individual and group trainings with the use of psychotechnical tools to improve communication and prevent conflict situations with difficult patients and colleagues.

Conclusion. Such forms for training of health care executives enable to proceed with a system improvement in the performance of medical organisations, enhancing the level of patients' satisfaction and prompting more positive image of the health care system.

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## PSYCHOLOGICAL ASPECTS OF SELF-PRESENTATION OF PERSONAL AND PROFESSIONAL COMPETIVENESS OF A GRADUATE FROM THE SAMARA STATE MEDICAL UNIVERSITY WHILE SEARCHING FOR A JOB

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Without a doubt, one of the modern actual ideas is an idea of lifelong learning. Its sense and mission is to provide an effective professional growth, development and self-realization of an individual during his entire professional career.

The Department of Public Health and Healthcare, Institute of Professional Education, Samara State Medical University educates and graduates healthcare administrators, clinical ordinators and interns in accordance with the curriculum.

The subject of postgraduate professional education of doctors consists of further development in order to become a specialist through intense practice, personal self-development, gradual mastering the qualification, which should be implied as a system of special knowledge, skills and capabilities, as well as development of personality traits for effective and qualitative performance of the professional requirements. Moreover, there are psychological aspects of developing professionally important qualities, psychology of business communication and psychological aspects of self-presentation of personal and professional competiveness of a graduate of the SamGMU while searching for a job.

To educate a good doctor means to provide him with the knowledge and expertise, to build up stable professional skills otherwise inadequate communicative competence may cause serious difficulties in practice.

Therefore the curriculum contains such issues as profesiography, professional clearing, psychological typecasts accompanied by a specialist's psychological passport with a program for personal growth. To make this programme, diagnostics of professional requirements for a doctor is used. Such necessary qualities as social flexibility, durability, an ability to start a dialogue, emotional self-regulation, verbal and non-verbal means of communication and organisational competencies are considered.

Besides, some basic job application skills on writing and submitting a resume are taught along with interview ethics aimed at interaction with top healthcare executives. Psychological grounds for self-presentation of competiveness (personal and professional) in the process of employment are gained.

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## INTEGRATIVE DEFICIENCY INTERHEMISPHERIC SYNDROME OF THE LEFT-HANDED CHILDREN SUFFERING FROM EPILEPSY

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In this report we provide the results of the comparative neuropsychological examination of the children and teenagers suffering from epilepsy, the right-handed and sinistral ones (left-handed and ambidexters) and healthy persons. The aim of the investigation was to retrace the distribution of the typical cerebral functions of the right and left hemispheres, the possibility of the characteristic deficiency neuropsychological syndromes emergency and the possible mechanisms of their development in connection with a handedness factor. Epilepsy EEG-characteristics, handedness, speech lateralization (according to the dichotic test), the sex and age were considered. The sinistral rate in the group of patients with epilepsy was authentically higher, than of the healthy ones. In the group of patients as a part of neuropsychological syndrome some types of changes were marked out: the ones connected with localization and lateralization of the epileptic center, less specific, peculiar to all the studied groups to some extent of expressivenesses, and those connected specifically with handedness. Neuropsychological deficiency syndrome of the left-handed persons is mostly shown in the disorders of the visual and spatial perception, the activation and concentration of attention, speech functions. According to the extent of the integration increase of the brain functions the left-handed patients show the growth of the recognition deficiency and information processing by "the new is the well-known" principle and the subsequent stage – "routinization – algorithmization", that are the qualitative stages of the brain programs formation. As a whole the deficiency syndrome of speech functions and the information processing strategy of the right-handed patients had the locating in the left hemisphere mainly, and towards the left-handed – both in the left, and right hemispheres. Thus, the deficiency of the right hemisphere functions was expressed better. We called this phenomenon integrative deficiency interhemispheric syndrome.

Concerning sinestral patients the deficiency syndrome of the right hemisphere is more expressed at the persons with the right-hand speech lateralization. The primary localization analysis of the neuropsychological disorders of nonspecific character (frontal, temporal, inferior parietal and parietooccipital lobes of the brain) showed that these are exactly the departments where the associative systems of the brain are most presented. They can be mostly injured at patients with epilepsy, both of the left-handed and right-handed ones. But also these systems of the left-handed people can be more vulnerable and injured, that facilitates the involvement of many departments of the brain in the pathological process and explains polymorphism of the manifestations of all the revealed painful states. The girls are observed to have the problems of the frontal departments mostly, and the boys – of the temporal ones. Thus, the function shift of the motor domination by the purposeful actions,

more frequent right-hand speech lateralization of the left-handed patients came out to be a compensatory relateralization of the phylogenetic late and power-intensive brain functions under the influence of the adverse conditions of the foetus development. Thus they start competing with the typically visual and spatial functions of the right hemisphere, inhibiting them. In the conditions of a disease such integrative deficiency interhemispheric syndromes amplify, filling up a range of the disorders of specific components in the genesis of which the epileptic and residual and organic centers are of primary importance. The most vulnerable ones, with the prevalence of the progredient forms in the course of epilepsy, there were the persons having the ambilateral signs of handedness and speech that, in our opinion, indicates the main role of the lateral distributions of brain functions in the organism adaptation to various impacts of external influences.

The results we got indicate the ambiguity and multilevel of the organization and management of each of the analyzed brain function. There are various levels of the organization of functions not only in respect of the structural hierarchy of the brain formations and as a consequence the features of their functioning, but also the multilevel consolidation of the brain integrative activity during the organism activity realization and self-realization of the individual in the health and disease conditions.

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## MODERN BIOTECHNICAL OBJECTS FOR KEEPING MARINE MAMMALS

*International cultural and health-improving complex "Nemo"*
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In the last decade animal therapy discovered a new direction connected with the participation of the bottle-nosed dolphins that adapted in the artificial habitat quite well owing to the modern technologies in the preparation of microclimatic, hydrochemical conditions of the sea mammals keeping.

Today dolphinariums represent biotechnical complexes with automatically operated life support system in the set technological mode and are presented by the following components:

- the qualified experts: doctors of veterinary medicine, trainers, hydrobiologists, managers on the control of the difficult biotechnical process of water treatment;
- the special equipment which provides the comfortable keeping conditions close to natural and specific ones concerning the main microclimatic and hydrochemical parameters;
- scientifically grounded methods of microclimatic, hydrochemical, and social adaptation of the bottle-nosed dolphins in the new conditions of housing;
- theoretically substantiated techniques of the maintenance, training of dolphins taking

into account their conditioned-reflex activity.

The international cultural and health-improving complex "Nemo" (Ukraine, Russia, Belarus) that is one of the leading in the world among the associations of a similar profile, in the last decade organized a full cycle of work of dolphinariums including both the design, construction, operating and the dolphins reproduction in the artificial habitat as well. Possessing the technology of creation and control over the artificial habitat of water animals in various climatic conditions, "Nemo" complex has material opportunities to keep different types of water animals.

Scientific and practical experience of "Nemo" complex is used by many countries in the installing and operation of the automated process control system of the life support, the special compounding of the artificial sea water, its disinfecting, and also the veterinary and medical practice on the prevention, diagnostics and treatment of sea animals.

The author's complex method of the dolphin therapy realization towards the children with special needs, in particular, suffering from autism, infantile paralysis, mental and language retardations, post-traumatic stressful disorder, etc. was developed. In Ukraine, this method is officially allowed by Ministry of Public Health for the introduction into the medical practice.

Thus, we consider the activity of dolphinariums and oceanariums as a necessary modern scientifically-practical project aimed at studying problems, dealt with ecology of the surrounding environment, studying water animals, their keeping, reproduction, the preservation of the genetic fund of sea mammals, and also the aid in the improvement and treatment of children with mental and behavioral disorders.

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## COMPARISON OF RESULTS AND THE QUALITY OF LIFE CHARACTERISTICS AT LONG TERM OBSERVATION PERIODS OF INTERVENTIONAL AND CONSERVATIVE TREATMENT OF PATIENTS WITH CHRONIC ISCHEMIC HEART DISEASE

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Objective. To compare of the results and of the quality of life characteristics at long term observation periods of interventional and conservative treatment of patients with ischemic heart disease.

Material and research methods. The research was done according to the plan of

research works of State Research Institute of Preventive Medicine (Moscow) and Tver State Medical University (Tver) of the Health Care Ministry of the Russian Federation: 1st stage – the groups of patients were formed and their clinical, instrumental and laboratory checkup was done; 2nd stage – the estimation, analysis and comparison of the results of interventional and conservative treatment, characteristics of the quality of life of patients was done. All in all, 146 patients with chronic ischemic heart disease were examined: the main group – 102 patients and the comparison group - 44 patients. The patients in the first group received coronary angiography, stent implantation and angioplasty of coronary arteries; the patients in the second group were only given optimal medicamental therapy. They were registered in the regional clinical cardiologic dispensary of Tver and State Research Institute of Preventive Medicine (Moscow). The groups were matched according to sex, age, main and concomitant pathology. The patients' quality of life parameters were studied. Enquirer evaluation method «SF-36 Health Status Survey» was used for this purpose. We analyzed the following parameters of the quality of life: General Health (GH) – general state of health; Physical Functioning (PF) – physical functioning; Role-Physical (RP) and Role-Emotional (RE) – influence of physical and emotional state on role functioning; Social Functioning (SF) – social functioning; Bodily Pain (BP) - intensity of pain; Vitality (VT) - viability; Mental Health (MH) – self-assessment of mental health. The term of observation encompassed 3.6 +/- 1.3 years on average.

Results and conclusions. The results were obtained that the men and women of the main group got a higher index of physical functioning than those in the comparison group (by 23.1% and 18.2% respectively; both $p<0.05$). The men in the main group had the indices of their physical health and pain intensity higher than those of the women (by 24.6% and 21.4%; both $p<0.01$). A positive correlation was discovered between the indicators of general state of health and pain intensity; vital capacity, self-evaluation of mental health.

Therefore, the patients with chronic ischemic heart disease at long term observation periods after interventional treatment had higher subjective tolerance for physical activities than the patients who received only optimal medicamental therapy. It has been diagnosed that regardless of gender there was a connection between the patients' inmprovement of physical well-being and increasing of vitality when using interventional treatment tactics.

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## MORPHOMETRIC STUDY OF HEPATOCYTES OF JUVENILE DOGS IN A TERMINAL STATE OF TRAUMATIC SHOCK

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Liver dysfunction due to its structural change in the mechanism of shock plays an important role. The morphology of the liver, as a "shock organ" is studied well enough in shock, but there are still many unclear and controversial questions.

Experiments were carried out on 6-8 month outbred juvenile unanesthetized dogs of both sexes (9 dogs). The shock was caused by the method W.Cannon. In the first series of experiments on the soft tissues of the thigh of the dog blows in the quantity necessary for permanent decrease in systemic arterial pressure to the level of 40-50 mm Hg were struck. In the second series of experiments on the soft tissues of a thigh of a dog blows were struck until systemic arterial pressure was decreased to the level of 80-90 mm Hg ; directly after this the bleeding from a femoral artery reducing arterial pressure to the level of 40-50 mm Hg in addition was caused. All experimental animals before the trauma, as well as control dogs before taking of liver tissue for examination, were fixed on the operating table in the supine position. Under local anesthesia with 0, 5% solution of novocaine was allocated the right carotid artery, then it was cannulated and connected with U - shaped mercury manometer Louis for recording of arterial pressure; left femoral artery and a vein were also cannulated. Liver tissue was taken at the time of reducing the systemic blood pressure of 25-30 mm Hg by surgical biopsy. The duration of the shock at the time of reducing the systemic blood pressure of 25-30 mm Hg in the dogs of first series of experiments was 23 to 30 minutes, and in dogs of the second series - 27 - 40 minutes. Pieces of liver were fixed in Carnoy's fluid. Up to 5 milimikron paraflin sections were stained with haematoxylin and eosin, as well as by Van Gieson's method. For morphometric evaluation of the liver was used the method of "Visual classification under statistical control"; was applied ocular gride "VC-4". Hepatocytes were categorized into 5 visually distinguished from each other classes: N1 - normal hepatocytes, N2 - hepatocytes in the stage of granular dystrophy , N3 - hepatocytes in the stage of vacuolar dystrophy , N4 - hepatocytes in the stage of balloon dystrophy , N5 - hepatocytes in the stage of necrosis. For each classes were estimated mean volume (q) and standart deviation (L) in percent. Differences were considered significant at p values less than 0.05. Experiments complied with local regulations concerning the use of animals for research purposes.

Our research has shown that mean volume of normal hepatocytes in traumatic shock with blood loss and without it , in comparison with the control, is statistically significantly decreased (control - 98±1.6 , I series - 86±9. 6, II series – 67.3±3.2.); wherein, by traumatic shock with blood loss mean volume of normal hepatocytes is statistically significantly less than in traumatic shock without it. Mean volumes of hepatocytes in the stages of granular dystrophy (I series - 10±3.2, II series – 18 ±3.2) and vacuolar dystrophy (I series - 3.3±4.8, II series –11.3 ±1.6) are statistically significantly less by traumatic shock without blood loss, than by traumatic shock with blood loss. A minimal amount (0.7 ± 1.6) of hepatocytes in the stage of balloon dystrophy were marked only in the first series of experiments; hepatocytes in the stage of necrosis were found only in the II series of experiments (5 ± 3.3). Data about the time of appearance and localization of necrosis in the hepatic lobule in shock are contradictory. According to some authors necrosis of hepatocytes by short-term shock does not occur. Contrary to these data , in our experiments we have revealed necrosis of hepatocytes in short-term shock. Characteristic features of liver histology in shock part of authors consider centrilobular necrosis; however, in other studies, small foci

of necrosis of hepatocytes were found in both central and peripheral parts of the lobule. In our experiments we observed necrosis of hepatocytes in all areas of lobules, but it should be noted that the areas of portal fields were more reserved.

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## THE COMPLEX TREATMENT IN PATIENTS WITH POLYTRAUMA USING OZONTHERAPY AND ENDOLYMPHATIC ANTIBIOTICS THERAPY

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As the consequence of WOH findings, traumatism is reported to take the third place in general structure of mortality. The level of combined trauma is 26-80% in all non-outpatients cases. Nowadays it is the tendency, that polytrauma is increasing in connection with mechanical injures (road traumatism, industrial traumatism, trauma after falls and after different catastrophes and extraordinary accidents). Between 2006 and 2013 at Municipal Clinical Hospital 5 in the surgical resuscitation, trauma and other departments patients with different mechanical injures were treated. The general quantity of those was 415 between 18 and 85 years old with the mean age 53 years, there were 261 men (63%) and 154 women (37%). The structure of combined trauma consisted of thoracic cage injures with contusion of heart and lungs (50 %), skull injure (70 %), injure of the vertebral column and extremities (51 %). The combination of disorders of different systems and organs was noted. The severity of general state was assessed with using results of physical examination, laboratory investigations, electrocardiogram findings, X-rays studies of skeleton, immunofermental method. Prognosis and severity of general state was obtained with using Revised Trauma Score – classification, Injure Severity Score, Apache II and with data of the level of proinflammatory cytokines (TNF, IL-1beta, IL-6, IL-10) in blood. This research is performing in conformity with award program of support of young scientists by the Russian President. There were 2 groups of patients. The first group (the control group) included 217 patients (52%), who were treated with standart programme. The second group (the study group) consisted of 198 cases (48%), who were treated with complex method with using ozontherapy and endolymphatic antibioticstherapy of Gentamycin. Our findings of the level of proinflammatory cytokines in blood and the stages of traumatic disease in all patients have shown that there were marked characteristic changes of the level of proinflammatory cytokines in it. Those were depended on the general state of the patient. In the first stage (primary effect) usually the increase of the level of cytokines of this group was not significant or it was normal. Then in conformity of progress of traumatic shock it was change for the worse of the general state of the

patient and increase of the level of cytokines in blood. In the hypercatabolism phase we have revealed prolongation of the increase of the level of cytokines (change for the worse) or the level was still high, but had not been enlarged (change for the better). In the phase of resorption the level of proinflammatory cytokines was increased again or was high (the negative tendency). If the level had been decreased, it was the evidence of the positive effect of the treatment. In case of polyorganic disorders we have noted the constant increase of the level of cytokines (the negative tendency). In this situation either there were mortal changes and death, or it was septic condition. If the level of cytokines had been decreased, it was the evidence of positive tendency. Results. In the first (the control) group we have achieved good results in 25 cases (23%), satisfactory - in 27 (25%), poor –in 58 patients (52%). In the second (the study) group good results were achieved in 46 patients (51%), satisfactory - in 35 cases (39%), poor –in 9 patients (10%). Our findings and results of other studies have shown, that the analysis of the level of cytokines in blood is the possible way to prognosis and to change the treatment of traumatic shock in time in patients with polytrauma, and statistically and significantly the better results were in the study group where the new complex method of treatment with using ozontherapy and endolymphatic antibiotics therapy with Gentamycin was used.

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## PRÄ-, PERI- UND POSTOPERATIVES MANAGEMENT BEI ROBOTER-ASSISTIERTEN OPERATIONEN IN DER UROLOGIE

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Komplexe Operationen in der Urologie wie die radikale Prostatektomie, die radikale Zystektomie und Niereneingriffe werden in Deutschland zunehmend roboter-assistiert durchgeführt. Und dies obwohl sich das da Vinci-System aufgrund der hohen Kosten, die nicht im DRG-System abgebildet werden, noch nicht flächendeckend durchgesetzt hat.

Der minimalinvasive Zugang, der geringe Blutverlust und die hohe Präzision durch die 10-fache Vergrößerung, die 3D-Sicht und die genau zu steuernden Instrumente führen zu weniger Komplikationen und einer schnelleren Erholung der Patienten mit kürzeren Krankenhausliegezeiten.

Genauso wichtig wie das präzise Operieren ist jedoch auch das prä-, peri- und postoperative Management der Patienten, das sich teils deutlich von dem bei offenen Operationen unterscheidet.

Wir stellen hier unser Vorgehen bei der roboter-assistierten radikalen Prostatektomie (= RARP) und der intrakorporalen Zystektomie (=RARC) vor.

Sebastian Edeling
Sasa Pokupic

## INTRAKORPORALE HARNABLEITUNG BEI DER ROBOTERASSISTIERTEN RADIKALEN ZYSTEKTOMIE (RARC) – ERGEBNISSE UND ERFAHRUNGEN NACH 50 PATIENTEN

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Die roboter-assistierte Zystektomie (=RARC) wird seit 2005 zunächst in den USA und nun auch in Europa durchgeführt. Erste onkologische Daten bezüglich positiver Absetzungsränder, Anzahl der entfernten Lymphknoten und 5-Jahre-Überleben zeigen keine Unterschiede zur offenen Operation. Vorteile bestehen in der niedrigeren Komplikationsrate, einem verkürzten Krankenhausaufenthalt und einem geringen intraoperativen Blutverlust. Obwohl die Durchführung einer intrakorporalen Harnableitung möglich ist und sich erst durch diese die vollen Vorteile der minimalinvasiven Chirurgie ergeben, werden zur Zeit noch knapp 80% der RARCs mit einer extrakorporalen Harnableitung durchgeführt.

Wir berichten über unsere Erfahrungen bei der Durchführung einer RARC mit intrakorporalem Ileumconduit und intrakorporaler Neoblase und vergleichen die Outcomes.

T.W. Erem
K.W. Erem

## NUTRITIONAL REQUIREMENTS FOR RESIDENTS LIVING UNDER ECOLOGICALLY UNFAVOURABLE CONDITIONS IN UKRAINE

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Ecological situation developed over the recent decades in Ukraine is extremely unfavourable. It is a result of uncontrolled use of pesticides and fertilizers, environmental pollution due to industrial and transportation waste, large-scale spread of radionuclides caused by the accident at the Chernobyl nuclear power plant. Ecological situation became worse also due to military events in the Eastern part of the country. In foods and drinking water used by residents of this region, the concentration of toxicants often exceeds the permissible dose.

Objective: Development of diets that in addition to traditional functions should provide reduced bioavailability of xenobiotics in the gastrointestinal tract, weaken unfavourable effects of foreign substances and factors at cellular level, diminished deposition of xenobiotics and their metabolites in organs transforming xenobiotics and accelerated excretion of xenobiotics and their metabolites out of the body.

Methods: Methods of investigation used in this work include epidemiological, laboratory-instrumental, sanitary-chemical and mathematical-statistical - analysis of the results of the study. As factorial indicators for assessing the overall morbidity of population the data of environmental monitoring derived from primary documents of sanitary surveillance were used.

Results: The study of the nutritional status of the population of Ukraine shows a tendency of its deterioration. In recent years, the consumption of animal products, vegetables and fruits gradually declined. The consumption of bread, cereals, pasta, confectionery and sugar increased. This led to a reduced content of proteins, vitamins, macro- and microelements in the diet. As a consequence, the majority of population has deviations in health status and requires a therapeutic and preventive nutrition. Very negative effects have man-made disasters caused by military operations in the Donetsk and Lugansk regions of Ukraine.

It is hard to recommend the composition of the food basket and expect compliance regarding the difficult economic situation in Ukraine. In order to ensure the intake of all essential nutrients, the diet should be varied and include dairy products, meat, eggs, bread, fruits and vegetables.

Conclusions: 1. We consider that from economic, social, hygienic and technological points of view the production of fortified foods is an expedient and the most effective solution of the problem. These foods should be enriched with macro- and microelements up to a level covering human physiological requirements. It is inexpedient to enrich foods with one mostly required element.

2. Food fortification is a serious intervention in the traditionally formed structure of the human diet dictated by lifestyle changes.That is why food fortification should be implemented only on the basis of clearly defined, scientifically sound, proven in practice, medical, biological and technological principles.

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## INTEGRIERTES PROGRAMM ZUR BLUTEINSPARUNG BEI DER HERZCHIRURGIE

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Die Behandlung von akutem Blutverlust ist ein aktuelles Problem der Chirurgie und der Transfusiologie. Die Verwendung von Spenderblutbestandteilen birgt das Risiko der Entwicklung von Posttransfusionskomplikationen. Außerdem wird das Wachstum des Mangels an Spenderblut weltweit beobachtet. Deshalb ist es notwendig, den Gebrauch von Spenderblut in der Chirurgie einzuschränken und im Idealfall ganz aufgeben. Zurzeit ist die Möglichkeit eines totalen Verzichts auf Spenderblut bei der Durchführung von elektiven Operationen an Kardiochirurgie-Patienten offensichtlich.

Material und Methoden: Die chirurgische Klinik der Russischen Universität der Völkerfreundschaft implementiert seit 1999 ein umfassendes Programm mit prä-,

intra- und postoperativen Maßnahmen, die auf die Erhaltung des eigenen Blutes bei kardiochirurgischen Patienten abzielen. Die Durchführung dieser Maßnahmen hat bei 93% der Kardiochirurgie-Patienten, die elektive Herzoperationen hatten, einen Verzicht auf Spenderblut ermöglicht. Die Gesamtzahl der Patienten, an denen Herzoperationen im Einklang mit diesem Programm in den letzten 10 Jahren durchgeführt wurden, betrug 835.

Ergebnisse: Bei 63% der Patienten wurden die Operationen wegen der ischämischen Herzkrankheit, bei 24% wegen der erworbenen Herzfehler durchgeführt. Das beinhaltete unter anderem folgende Eingriffe: Protethik der aufsteigenden Aorta, Entfernung von Septumfsdefekten und Entfernung von Herzschwellungen. Bei 7,2 % der Patienten wurden Reoperationen durchgeführt. In der präoperativen Phase wurde das Eigenplasma durch einfache oder doppelte Plasmapherese vorbereitet sowie die Korrektur der Hypoproteinämie und der Anämie durchgeführt. Das durchschnittliche Volumen vom vorbereiteten Plasma betrug 925 ml (CI 650-1380 ml). Bei 6,2% der Patienten mit dem Hb-Spiegel unter 100 g / l wurden 2000 Einheiten/kg Erythropoietin, Eisen und Vitamine verabreicht. 5-7 Tage vor der Operation wurden Thrombozytenaggregationshemmer nicht mehr genommen. Die Einnahme indirekter Antikoagulantien wurde durch Heparin ersetzt, das 12 Stunden vor der Operation abgesetzt wurde. Nach der einleitenden Narkose und während der Operation wurde normovolämische Hämodilution und die Entnahme von 600-900 ml des Blutes durchgeführt. In der Phase der künstlichen Blutzirkulation wurden keine Blutbestandteile verwendet. Das Ursprungsvolumen für die Füllung der künstlichen Blutzirkulation wurde minimiert. Um eine unkontrollierte Hämodilition zu verhindern, wurde Blutkardioplegie verwendet. Das Eigenblut wurde nach dem Anhalten der künstlichen Blutzirkulation und der Heparin-Inaktivierung durch Protaminsulfat zurückgebracht. Als Nächstes erfolgte die Eigenplasma-Transfusion. Chirurgische Aspekte der Minimierung von Blutverlust waren wie folgt: statt eines Skalpells wurden möglichst viel das Elektromesser oder das Ultraschall-Skalpell genutzt; Kanülierung und Dekanülierung der Aorta sowie das Einbringen der Kardioplegie-Kanüle erfolgte bei einem bis 80 mm Hg gesenkten Druck; die Operationsphasen, die durch die Entwicklung der Blutung erschwert werden konnten, wurden nur nach Schaffung von Bedingungen für die Blutentfernung durch koronare Absaugung und das Zurückbringen des Blutes dem Patienten durch den Apparat der künstlichen Blutzirkulation durchgeführt. Bei wiederholten Interventionen wurden die Ventrikel nur teilweise von den Verwachsungen herausgezogen und die Drainage der linken Herzkammern erfolgte durch die Lungenvene, um den Blutverlust zu verringern. Die Faktoren, die für den Verzicht auf Spenderblut sprachen, waren die Indikatoren des Säure-Base-Gleichgewichts, Lactat, pO2(v), die Auskunft über eine ausreichende Sauerstoffzufuhr zu den Geweben bei den niedrigsten Hämatokrit-Werten gaben. Bei Blutverlusten von 500 ml innerhalb von 4 Stunden auf den Drainagen und einer Hämatokritsenkung unter 28% wurde das entnommene Blut gewaschen und den Patienten zurückgeführt. Für die Blutentnahme in der Postperfusions- und der frühen postoperativen Phase wurde ein Blutaufbewahrungsreservoir verwendet. Wenn ein Verlust durch Drainage in 4 Stunden zu

500 ml und mehr und niedriger als 28% Hämatokrit Blut Drainage gewaschen und zum Patienten zurückgeführt.

Fazit: Die Nutzung des beschriebenen Programms führte zu einer durchschnittlichen Reduktion des perioperativen Blutverlustes von 32%, zur Senkung der Häufigkeit von postoperativen Komplikationen wie z. B. Mediastinitis, Pneumonie sowie zur verkürzten Dauer der postoperativen Phase.

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## DAS VORHANDENSEIN DER HÄMOLYTISCHER ESCHERICHIA COLI IN DER MIKROBIOZÖNOSE IM COLON DER KINDER ALS INDIKATOR FÜR NEUROLOGISCHE ERKRANKUNGEN

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Eine der Formen neurologischer Erkrankungen bei Kindern in den ersten beiden Lebensjahren ist Aufmerksamkeitsdefizit-/Hyperaktivitätsstörung (ADHS oder veraltet Minimale Cerebrale Dysfunktion (MCD)). Anzeichen von minimalen zerebralen Störungen werden laut dem Kinderneurologen L. A. Ratner (1985) bei durchschnittlich 23-27% der Neugeborenen durch eine sorgfältige neurologische Untersuchung identifiziert. Die neurologischen Auffälligkeiten werden abgeschwächt oder verschwinden bei der Mehrheit dieser Neugeborenen bis zum ersten Lebensjahr. Jedoch können laut L. A. Ratner (1990) neurologische Störungen, die im ersten Lebensjahr vorhanden sind, viele Jahre später (in der Adoleszenz oder später) durch die Entwicklung der Vertebro-basilären Insuffizienz zum Vorschein kommen Einer der Gründe für diesen Zustand ist die Instabilität der Halswirbelsäule mit eingeschränkter zerebraler Hämodynamik der Wirbelarterien.

Klinische Manifestationen der vaskulären zerebralen Pathologie sind aufgrund der Einbeziehung von Kompensationsmechanismen oftmals mild ausgeprägt. Diese Kinder bilden die Risikogruppe der Entwicklung von akuten Durchblutungsstörungen mit einer Vielzahl von Krankheitssymptomen – Veränderungen des Sehvermögens, des Hörvermögens, Änderungen im Sehen, Hören, dem Vorhandensein von Schwindel, Kopfschmerzen, Störungen im Darm, etc. …Deshalb ist die Entwicklung neurologischer Marker zum präklinischen Nachweis der neurologischen Gefäßpathologie eine der Aufgaben der modernen Medizin. Wir haben die Verbreitung der hämolytischen Escherichia als Bestandteil der Mikrobiozönose im Colon der Menschen unterschiedlicher Altersgruppen analysiert. Dabei ist uns aufgefallen, dass hämolytische Escherichia bei den Kindern im ersten Lebensjahr häufig vorkommt (45,6%). Der Nachweis der hämolytischen Escherichia als Bestandteil der Mikrobiozönose im Colon der Kinder unter zwei Jahren reduzierte sich auf 37,2% der Fälle. In der Gruppe der Kinder unter 18 Jahren betrug dieser Parameter 27,6 %, was mit einer verringerten Erscheinung der neurologischen Störungen direkt korrelierte.

Die Analyse der Biozönose im Colon bei 620 Kindern unter zwei Jahren mit einer Neuropathologie ergab das Vorhandensein hämolytischer Escherichia bei 521 Kindern (84,1%). Hämolytische Escherichia fehlte komplett bei 99 Kindern (15,9%). Dieser Befund bei Kindern mit einer Neuropathologie und ohne zeigt einen Zusammenhang zwischen dem Vorhandensein hämolytischer Escherichia und neurologischen Störungen.

Die Studie zeigte, dass das Vorhandensein hämolytischer Escherichia bei Kindern unter 2 Jahren ein Biomarker neurologischer Erkrankungen sein kann.

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## PNEUMOPRESSURE IN RECOVERY MEDICINE

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Today in Ukraine the number of psychoneurological disturbances among children and teenagers has increased. On some diseases of brain, in particular, on the consequences of congenital organic brain damages and cerebral spastic infantile paralysis Ukraine advances the European countries, on other diseases – on infantile autism comes closer to the European indices. This fact compels doctors to prescribe their patients various medicines improving brain blood circulation. It is offered to use a method of physiotherapeutic massage or pneumopressure in infantile psychoneurology as an auxiliary method.

The method of volumetric pneumopressure is carried out by means of "Bioregulyator-004" complex hardware developed in the technical organization "New in Medicine" by I.V. Tarshinov and entered in the State register of the medical products allowed for use in medical practice of Ukraine. The complex consists of the control unit, the power block, the air compressor and the unified pneumocuff.

The pressure in the airtight compartments of the cuff is a main working "tool" when conducting a medical procedure. The level of pressure created in compartments, determined by the contents of the working programs put in the programmer. To a lesser extent the pressure in the compartment depends on the way of fixing of the cuff on some part of the patient's body under treatment. Thus, the measurement of pressure in common air-lines of the device does not make sense. As appropriate one should measure pressure in each concrete compartment of the pneumocuff. Changing the density of the fastener of each compartment, it is possible to achieve various pressures on separate parts of the treated body part with a constant pressure of air in the common air channel of the complex. The pressure in the general channel is regulated by the special regulator installed in the air duct between a compressor discharge and an entrance of the distributive pneumoblock. Thus, it is more convenient to control pressure concerning one, earlier chosen compartment (it is desirable to be clasped in a standard manner). The device additionally provides an opportunity to change pressure in each separately taken compartment. For this purpose in the connection area of the pneumomattress and the head air duct the adapters with

calibrated micro holes, dumping excess air in the atmosphere have been installed. When being off the micro holes are closed by an elastic ring. The micro holes allow expanding possibilities of the influence at the set number of programs. With the same purpose using of the so-called reset clutch fixed on the back panel of the control unit is offered.

Under the influence of pneumopressure as a result of activation of exchange processes in muscular tissue the spastic and plastic hyper tone of muscles is normalized, restoration of their working capacity, influences are accelerated, lymphatic skin vessels, more deeply lying tissues are easily emptied, the lymph outflow is accelerated, the reflex action on the lymphatic system which is followed by an improvement of tonic and vasomotorial functions of lymphatic vessels is carried out.

The recitation of the found effects of pneumopressure, and also saved-up experience of its application allows recommending it as a nonspecific revitalizing means having a wide scope. It can be applied both independently, and as a background to pharmacotherapy and psychotherapy.

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## HELICOBACTER PYLORI INFECTION AND DIABETES MELLITUS

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Helicobacter pylori (H. pylori) infection - one of the most common bacterial chronic infections in man. H. pylori does not enter the bloodstream. Causing a chronic low-grade inflammatory process in the gastric mucosa, it can indirectly via immune response to inflammation, molecular mimicry mechanisms, influence on nutrient absorption facilitate damage of distant tissues and organs. In its turn, the diabetes-induced disturbance of cellular and humoral immunity may increase the individual susceptibility of infection H. pylori. In recent years, in the literature there have been published many controversial reports on the relationship of H .pylori infection with diabetes mellitus.

The purpose of research - to study the incidence of diabetes mellitus, in the population of working Moscow city residents, depending on the H. pylori status.

Material and methods. The study included working residents of the city of Moscow, who received yearly preventive medical examination - 1501 people. Among them there were 918 men and 583 women aged from 17 to 76 years (983 people under 50 years, 518 people - 50 years and older). Along with the traditional clinical-laboratory and instrumental examination (includes determining the level of glucose in venous blood) we studied the presence of H. pylori infection. In the blood serum we determined specific anti- H. pylori IgG antibodies by enzyme-linked immunoelectrodiffusion assay (ELISA). We used GastroPanel test (“Biohit”, Finland) in 992 cases and “Ecolab” test (Russia) in 509 cases.

The Results. H. pylori infection was detected in 1336 subjects (89%), with similar frequency in men and women. Diabetes mellitus was diagnosed in 54 people (3.6%), in men with a frequency of 3.5%, in women - 3.8%. In 14 persons diabetes was found for the first time. By one surveyed person type I diabetes was identified, in the rest - type II diabetes. H. pylori infection did not affect the frequency of diabetes mellitus type II: It was found in 3.7% of H. pylori positive subjects and in 3% - of H. pylori negative. In the residents of the metropolis under 50 years diabetes was found in 2.95% of cases, in individuals 50 years and older - in 4.8%.

Conclusion. H. pylori infection is highly prevalent in the city of Moscow. Dependence of the type II diabetes on H. pylori infection have not been identified. Further research is needed to determine the relationship between H. pylori infection and metabolic disorders.

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## THE PATHOLOGY AND MORFOLOGY OF LESION IN MICE BRAIN CORTEX UNDER INFLUENZA VIRUS A (H3N1 1/62) INFECTION

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The pathology caused by so-called “non neurotropic” virus infection, is not well understood. The urgency of the problem is not just the nature of the epy – and pandemic influenza with enormous human and economic troubles but the frequency lesion, if CNS damages is the second after respiratory.

There are a number of features in the CNS contributing to the persistence of the virus. In addition to the above mentioned these include:1) mostly humoral factors of immune protection; 2) existence of special cells of mononuclear phagocytic system-microglial cells; 3) low capacity to develop interferon . So far, the question remains – what are the qualitative differences in morphological and pathogenetic entity lesion in viral influenza infection.

Our own examinations, performed in the period from 1996, have shown a direct cytopathic effect of influenza A virus (H3N1, H3N2, Yong Kong 1/68) on nuclei of medulla oblongata, parasympathetic nervous system with its primary damage. The neural transport of viruses from the periphery to the CNS is not well investigated but we and other authors have demonstrated on the CBA mice models that n. vagus, nuclei of m. oblongata and brain stem are most affected.

The aim of study is to reveal pathologic changes of brain cortex nervous elements in influenza A virus infection in experiment and to clarify neural disturbance by analyzing their ultra structural findings in mice under experimental influenza virus infection in first 16 days of experiences.

All experiments using live A Hong Kong H3N1 viruses were performed in a biosafety level-3 laboratory approved for use by Georgian Disease Control Center.

Ultra structural and histological appearance also volume fraction of neurons from parieto-temporal cortex in 6-week-old mice were carried out after 24,48-72 hours and 5-16 days of intranasal inoculation of influenza virus A (H3N1 1/62) Hong Kong.

Nerve cells in layer V of the cerebral cortex of mice respond to infection with influenza virus by complex changes: acute swelling, chromatolysis, vacuolization, shrinkage and neuronophagia.

Quantitative changes in the "acute" phase of infection up to 72 hours to testify of cortex cytoarchitectonic in the form of lower differentiation and higher monotony size of neurons with their polarization from very small cells to large, hypertrophied, which is unusual for the "intact" model of brain.

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## MODIFYING EFFECT OF OZONE AND PHYTOTHERAPY ON THE STRUCTURE OF THE LYMPH NODE THAT HAS UNDERGONE AGE-RELATED CHANGES

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The study of the structure of the lymph node, as the purpose of management of regional homeostasis, is relevant in relation to the elderly and senile age (Borodin Y.I., 2011). We believe it is important to search for morphological equivalents of compensation and adaptation of lymphoid tissue at the late stage of ontogenesis. Ozone and phytotherapy deserves special attention among the funds that affect the immune and drainage and detoxification functions of the lymph node (Gorchakov V.N. et al., 2002, 2013; Korsun V.F. et al., 2007).

The experiment was conducted on 160 white rats-males of different ages (3-5 months and 1,5-2 years). Mesenteric lymph nodes were investigated by histological method. X-ray fluorescent analysis with synchrotron radiation method is defined trace elements (Mn, Fe, Cu, Zn, Se) in the lymph node. We evaluated the effect of ozone and phytotherapy at different stages of ontogenesis.

There is a change in the area of structural and functional zones of the lymph nodes with age. Structural and functional zones of the lymph nodes are responsible for cellular and humoral immunity. Changing these zones leads to reduced resistance of the organism. We noted the formation of a deficiency of cellular immunity, as decreased T-zones and numerical density of lymphoid cells in the lymph node of old animals. We observed a decrease in humoral immunity, which was associated with a decrease in the size and number of lymphoid nodules with germinative center. Obviously, lymph node reflects the state of the functional overload. Functional morphology of the lymph node does not provide

nonspecific resistance to the effects of adverse environmental factors on the late stage of ontogenesis. This fact contribute to the hardening and a reduction of lymphopoiesis in the lymph node. Analysis of the obtained data showed that ozone and phytotherapy have an immunomodulatory effect on the structural and functional zones of the lymph node. The combination of ozone and phytotherapy causes a change of structural and functional zones of the lymph node. Ozone and phytocorrection leads to a statistically significant reduction of the areas of the cortical plateau (1,3 times), medullar sinus (1,8 times) and increase the size of medullar cords and lymphoid nodules with germinative center (1,8 times) in the lymph node of older animals. The ratio of lymphoid nodules with germinative center and without germinative center had a high value that reflects the degree of active lymphoproliferative. The decrease in average square paracortex can be combined with hyperplasia paracortex in the lymph node. At a late stage of ontogenesis ozone and phytotherapy reinforce the processes leading to fragmentation of the lymph node due to the separation part of the cortical substance. Increased lymphoproliferative accompanied by a process of lymphoadenogenesis, when there is the formation of new lymphoid nodules (follicles) within the lymph node and beyond the lymph node. The formation of new lymphoid structures should be considered as compensatory propositional response to the late stage of ontogenesis. It is important to improve the immune status and nonspecific resistance of the organism. The use of ozone and phytotherapy provides progressive morphogenesis and optimization of trace element status in the later stage of ontogenesis. The ozone and phytotherapy leads to an increase the iron (1,2 times), the copper (1,36 times), the zinc (1,2 times) contents in the lymph node of older animals, which makes the content of these trace elements to the values occurring in young animals. Ozone and phytotherapy improves drainage and detoxification, immune functions of the lymph node at a late stage of ontogenesis. Positive lymphotropic effect is associated with trace element status and lymph node structures of older animals.

Thus, the use of ozone and phytotherapy leads to the strengthening of neolymphogenesis with increased immune potential and drainage function of the lymph node that has undergone age-related changes. The obtained data is important to consider the programs of endoecological rehabilitation and antiaging.

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## DIAGNOSTIC VALUE OF IL-6 IN DIFFERENT BIOLOGICAL MEDIA IN PATIENTS WITH OBSTRUCTIVE JAUNDICE

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Introduction. It is known that recently in all developed countries the rise of cholelithiasis complicated with obstructive jaundice (OJ) syndrome has been observed. Considering that cytokines are important mediators of inflammatory response, powerful immunoregulators, and they play an important role in development of immune

response, maintaining normal homeostasis at the organ and organismal level, the study of nature and degree of disturbances of cytokine status in local and systemic level is an actual problem in obstructive jaundice. Since production of cytokines induced mainly in pathological focus, it is advisable to determine their levels in respective tissues or environments.

The aim of the study. Comparative evaluation of IL-6 concentrations in liver tissue (LA), ductal bile (DB), blood plasma (BP) and in urine depending on degree of hepatic dysfunction (HD) in surgical treatment of patients with obstructive jaundice.

Materials and Methods. 67 patients were examined with choledocholithiasis complicated with obstructive jaundice that underwent cholecystectomy + choledocholithotomy and external Kerr T-tube drainage of common bile duct (37 patients), cholecystectomy + biliodigestive anastomosis (15 patients) and minimally invasive interventions (15 patients). The concentration of IL-6 in supernatants of liver tissue which was taken during operation (42 patients), in first portion of ductal bile (42 patients) and in blood plasma 3rd and 7th day after external biliary tract decompression (37 patients) in plasma and in urine before and after operation in dynamics (67 patients) was investigated by ELISA method.

Results and discussion. First degree HD (total bilirubin level up to 50 mmol/l) was observed in 21 patients, 2$^{nd}$ degree HD - 14 (the level of total bilirubin from 50 to 100 micromoles/liter), 3$^{rd}$ degree HD - in 10 (total bilirubin level from 100 to 200 mmol/l), 4$^{th}$ degree HD - in 9 (bilirubin more than 200 mmol/l). In 13 patients in background of obstructive jaundice purulent cholangitis was observed. Contents of IL-6 in all group was 12.5 times ($p<0,001$) higher than the control, serum and urine levels exceed norm 2,1 times ($p<0,001$) and 12,9 times ($p<0,001$), respectively. The concentration of IL-6 in ductal bile taken during operation was average 57,5±5,1 pg/ml, i.e. greater than liver tissue, serum and urine. The concentration of IL-6 in the studied biological media was directly dependent on the degree of HD and presence of purulent cholangitis. With increasing degree of HD and purulent cholangitis, the content of this cytokine in liver tissue, ductal bile and urine is also rised. Comparative evaluation of IL-6 levels in different biological media in patients with various degrees HD showed that the concentration of cytokine in plasma is characterized by a lower level than in liver tissue, ductal bile and urine. Most of this cytokine was contained in ductal bile. Comparative study of concentration of IL-6 in bile and serum after surgery showed the same type on direction of changes (in the early days - an increase, and then - decrease) that indicates coincidence in development time of compensatory mechanisms at the local and systemic levels. Thus, the comparative evaluation of local (in liver and gallbladder) and systemic (serum and urine) level of IL-6 may serve as markers for assessing the severity and clinical course of pathological process, as well as monitoring of efficacy of treatment.

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# COMPARATIVE STATE OF LOCAL AND SYSTEMIC INDICATORS OF CELLULAR, HUMORAL IMMUNITY AND CYTOKINE PROFILE IN PATIENTS WITH PEPTIC ULCER BLEEDING

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Introduction. The generally accepted efficiency of modern anti-ulcer agents also did not solve the problem of gastric and duodenal ulcer, the number of patients with peptic ulcer bleeding is increased from year to year. The immune status of the organism also plays an important role in pathogenesis of gastroduodenal ulcer.

However, in patients with peptic ulcer bleeding, both local and systemic immunity, including cytokine profile was not fully studied.

The purpose of the study. The study of some local and systemic indicators of cellular and humoral immunity and cytokine profiles in patients with peptic ulcer bleeding.

Materials and methods. On admission to the hospital in 154 patients with peptic ulcer bleeding (gastric ulcer – 37, duodenal ulcer - 111 and gastroduodenal ulcer - 6) was determined the content of cellular (CD3+, CD4+, CD8+ - lymphocytes) and humoral (CD19+ - lymphocytes, Ig A, M, G, circulating immune complexes (CIC) indicators of immunity and cytokine profile (TNFα, IFNγ, IL-1, 2, 6, 8 and anti-inflammatory IL-4, 10 of cytokines) in blood serum. In 107 patients local immunity were evaluated by studying lysozyme levels and IL-6 in gastric juice, and Ig A, M, G - in duodenal juice.

Results and discussion. In study of cellular immunity in patients with peptic ulcer bleeding were revealed a statistically significant decrease - in CD3+ - lymphocytes up to 32,9%, CD4+ - 32,5%, CD8+ - 13,3%, CD4+/CD8+ - 23.2% and phagocytic index (PI) - 18.9% than in healthy individuals. Also it was established disturbances in humoral immunity: a statistically significant increase of CD19+ - lymphocytes by 58.8% and CIC - 2.3 times, decrease of concentration of Ig A, M, and G respectively 16.5%, 15.8% and 10 7% ($p<0.05$).

On background of this, there was a statistically significant increase in concentration of serum TNFα - 5.7 times, IFNγ - 5.4 times, IL-1 - 9.9 times, IL-2 - 8.7 times , IL-4 - 6.2 times, IL-6 - 12.8 times, IL-8 - 2.5 times, and decrease in IL-10 - 45.2% compared with the normal. The content of IL-6 in urine was 8.2 times ($p<0.001$) more than in healthy individuals.

In stomach mucose the content of IL-6 by 37.5% ($p<0.001$) and lysozyme by 38.3% ($p<0.001$) was lower in comparison with the control group. In duodenal content was revealed decrease of Ig A, M and G respectively by 72.0% ($p<0.001$), 55.1% ($p<0.001$) and 37.6% ($p<0.001$) relative to normal indicators.

Conclusion. Thus, studies have shown that in patients with peptic ulcer bleeding

immunosuppression is observed in cell immunity with increasing levels of CD19+ cells and disbalance of immunoglobulins and cytokine status at the local and systemic level.

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## ASSESSMENT OF OVERDOSE SULFONYLUREA IN THE TREATMENT OF DIABETES BY CHEMICAL-TOXICOLOGICAL ANALYSIS

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Introduction. Relevance of the topic "overdose" of sulfonylurea derivatives (SU) leaves no doubts neither among forensic specialists nor among clinicians. Endocrinologists often have to control the concentration of SU in the blood to monitor the treatment of patients with diabetes.

Aims. To develop methodology for determining the concentration of SU in the blood and to calculate the dose took by diabetics, to determine an overdose and supervise the intake of administered doses and to detect the drug in the body.

Material and methods. Whole blood was studied in 36 patients of type 2 diabetes being treated in hospital receiving SU. Taking blood (5 ml) was performed in the morning on an empty stomach. The age of patients ranged from 60 to 87 years. Simultaneously, the data of clinical observations were collected. 7 patients were suspected to increase the dose on their own. The study was conducted with the method developed by us, which included: 1) isolation of SU from the blood; 2) purifying the extracts by thin- layer chromatography (TLC); 3) detecting SU by TLC and UV- spectroscopy; 4) quantification by UV - spectrophotometric method; 5) calculation of the dose received by the body on SU its concentration in the blood. Isolation SU from whole blood based on acidification objects 2N. hydrochloric acid to pH 2.0 and extracted three times with chloroform. The chloroform extract was divided into two equal parts, which were used for the qualitative analysis and quantitative determination by spectrophotometry after preliminary purification by TLC. Chromatography was carried out in the solvent system - chloroform - acetone (9: 1) on the plates "Sorbfil". As a solution "witness" used 0.01% solutions in methanol SU. SU identification was carried out on the values of Rf and color regions of localization of these drugs when spraying different chemicals. During identification of glibenclamide by Lieberman's test solution an orange spot with value of Rf 0,58-0,61 was produced, gliclazide – yellow sport with Rf 0,66-0,70, gliquidone by 1% solution of cobalt nitrate in ethanol test solution produced a violet spot with Rf 0,72- 0.76, nitrate of mercury test solution produced with glipizide gives black sport with 0.14-0.17, glimepiride gives Bushard's test solution-brown spot (like all SU) with Rf 0,36-0,39 and does not give staining above reagents. Detection by UV-spectrophotometry was performed with a spectrophotometer UV-VIS - 8453 «Agilent Technologies» in wavelengths within the 220-400 nm cuvettes with optical path length of 10 mm. Reference

solution served as methanol. Quantitative determination was performed on the calibration curve, which was built by the absorbance values of standard solutions with concentrations SU 2-50 μg/mL at wavelengths from 225 to 229 nm. Calculation of the dose injected into the body SU performed using the information of scientific works of different authors and clinical data, to calculate the coefficients of metabolism SU, the calculation of which were taken into account parameters such as: bioavailability of SU (about 100%), the maximum daily dose, the time T experience (in the range 24 hours).

Results. Using quantitative chemical-toxicological analysis (SU calculate the concentration in the blood of the patient), the calculated coefficients SU metabolism, conversion factor amounts of SU in the aqueous phase of the organism, taking into account their volumes of distribution (Vd) and the actual weight of the patient (P) developed a formula for calculating the introduced into the body dose of SU. Due to comparison of the data and medical history of the patients, it was found that 6 of 7 overdose patients (according to clinical observations) involved self-correction of the treatment, that is increasing the dose, which resulted in hypoglycemia.

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## PROGRESSIVE AND REGRESSIVE DEVELOPMENT DURING ADULTHOOD

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Problems of professional productivity are treated by numerous psychologists with the concept of "akme" with the meaning of reaching the peak or blossom.

Maturity is the longest period of life for most people. Its upper border is defined by various authors differently: from 50-55 to 65-70 years.

The boundaries of maturity: from 30 years till the time of actual retirement that is the end of active professional activity that occurs averagely at around 55-60 years.

Some scholars, such as E. Claparède believe that, reaching maturity in its peak and at the top of professional productivity, the individual stops his development and do not raise his professional skills, creative potential and so on.

In the period of maturity, the main points of life are normally professional activity and family relations. In many professions, the presence of professional peak is not obligatory and depends on individual characteristics of the man. Sometimes temporary or final decrease of creative productivity follows traumatic experiences.

E. Erickson stipulates as the main problem of maturity the choice between productivity and inertia, which characterizes the progressive and regressive evolution lines. According to Erikson, the productivity is correlated with the attention to people, results and ideas

that are important to the man. The lack of productivity, inertia leads to self-concentration and focusing on individual needs.

Development of the personality in a mature person requires getting rid of unjustified maximalism which is characteristic of adolescent and young period, switching to reflection and multiple approach to life problems and the issues of his professional activities.

Some people in adulthood may go through one more "unscheduled" crisis, which do not arise during two stable life periods but takes place inside a given period.

This is the so-called crisis of 40 years. It seems as if the crisis of 30 years has occurred twice.

It happens when the crisis 30 years has not solved existential problems.

The man is suffering from acute dissatisfaction with his life, discrepancy between life targets and their realization.

In addition to the problems associated with the professional activity, the crisis of 40 years is frequently caused by problems in the family.

The loss of loved ones, the loss of basic common aspects in the life of a couple such as direct participation in lives of children, a daily care of the child, causes final revelation of the nature of marital relations. If there is nothing more serious than children to bind the spouses, the family might fall apart.

In case of the crisis of 40 years, the man has to reconsider his life, to develop a relatively new "I-concept ".

The central new point of the age of maturity can be seen in the productivity.

With the crisis of 40 years, we can discuss another important new aspect of maturity: adjustments of the life targets and arising from them changes to the "I-concept ".

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## COMPLEX RADIO-DIAGNOSTIC FEATURES OF COMPLICATION PREDICTORS AFTER CORONARY ARTERIES STENTING

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The work was aimed to study complex radio-diagnostic parameters as predictors of complications after percutaneous coronary intervention (PCI).

The survey involved 131 male patients aged 20-75 years with multiple coronary arteries lesions and exposed to PCI. Total number of stents was 333, including 164 (49%) with drug emitting coverings (DEC), 169 (51%) – without DEC. As to concomitants diseases, there were 28% patients with diabetes mellitus.

Multi-factorial analysis of 57 quantitative parameters of radiation diagnostics was performed using 3 methods: coronarography, echocardiography, SPECT-tomography (perfusion).

Reasons of repeated referrals for relapses of angina pectoris, arrhythmia, myocardial infarction were analyzed.

The following results were obtained and considered complication predictors:

1. Left coronary artery lesion with the ongoing worsening of end diastolic volume.
2. Ongoing worsening of ejection fraction (EF): of both general and local contractility.
3. Aortic disruption with right heart failure.
4. Combination of lesions of the left coronary arterial trunk and the right ventricle.
5. At the second visit to physician, 26 patients had myocardial infarction. At the first referral, 3 significant parameters were recorded; at the second referral the combined ongoing worsening of EF with lesions of left coronary artery was revealed to be accompanied by impairment of end-diastolic volume (EDV), end-systolic volume (ESV), aggravation of perfusion, and added right parts: the number of parameters increased from 3 to 6.
6. In case of drug eluting stents in group of patients with myocardial infarction at the second visit to doctor the most reliable in hypokinesis was impairment of anterior left descending part (distal area): p = 0.03
7. Patients with diabetes mellitus most frequently visited the physician: in case of drug eluting stents by the second year, while similar patients with stents without drug eluting coverings presented by the fourth year (p= 0.002).

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## ACUTE CHEMICAL POISONING IN UZBEKISTAN: ACHIEVEMENTS, PROBLEMS AND DEVELOPMENT PROSPECTIVE OF TOXICOLOGICAL SERVICE

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Uzbekistan is not a country with dramatic increase in acute poisonings and suicides. Nevertheless, rapt attention has been paid to this problem in the country.

It is well known, that modern man lives in a toxic stressed atmosphere caused by ecological and human-made disasters, professional hazards, domestic accidents, and due to criminal and suicide reasons multitude of diseases of chemical etiology. About 6 million chemical compounds – xenobiotics, produced so far, are presenting a potential danger for health. Which results in dynamic and sustainable development of toxicology service in Uzbekistan. This service is hosted at the Republican Research Centre of Emergency Medicine (RRCEM) and its regional branches. In RRCEM there are departments of toxicology and intensive care units.

According to statistics of the research department, 114,370 patients with acute chemical poisoning were hospitalized in 2001-2014 in Uzbekistan. 26,778 (23.4%) of

them were children at age 0-18. We reported a notable increasing of the number of acute poisonings – from 6.670 patients in 2002 up to 12,503 patients in 2014. Drug poisoning still leads with 36.5%. On the second place - 33.1% is alcohol and its surrogates. On the third place - 14.8% is poisoning with cauterizing liquids. This follows by biological poisoning (7.2%), gazes (5.6%), chemicals and fertilizers (2.8%).

Monitoring of incomplete suicides (by drugs and vinegar) reveals an increase in their number whereas decrease in mortality rate. Gender analysis demonstrate the prevalence of females in socially active age.

Introduction of modern methods of detoxification: hemodialysis, plasmapheresis, hyperbaric oxygen therapy, enterosorption, intestinal lavage and standardization of intensive care facilitated reduction in total mortality and mortality in a number of nosology, such as poisoning with drugs, acetic acid, carbon monoxide as well as reduced stay in hospital. Suicidal department was incorporated into the department of toxicology

In further development of the toxicological service we are planning to set up a chemical and a toxicological laboratory, a consultation poisoning center, as well as to accomplish the prehospital emergency care due to specialized toxicological ambulances.

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## ORGANIZATION OF EMERGENCY SURGERY AND ITS RESULTS ON AMPUTATIONS OF LARGE SEGMENTS OF THE UPPER EXTREMITIES

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Surgical treatment of combined, multiple injuries and complete and incomplete separated limbs and their segments are the actual problem of emergency surgery, trauma and resuscitation. Disability in complex lesions vessels, nerves, muscles and bones reaches an average of 15.9%.

Republican Scientific Center of emergency medical care of the Ministry of Health of the Republic of Uzbekistan has experience in treating 98 patients with complicated bone and vascular lesions of large segments of the upper extremities, accompanied by a greater or lesser degree circulatory disorders. Among the patients men were 68 (61,2 %%), women - 30 (38,9%). Open combined bone and vascular injuries of various segments were 70 (71,4%), closed - 28 (28,6%). Most of them are people of working age (15-50 years) - 61 (62,2%). The patients came to the hospital in different ways. Almost half of them were brought to the emergency department by ambulance, but almost the same number of victims were delivered on their own (41,8%).

Surgical care for patients with limb injuries and their large segments is determined by the nature of the damage, and the peculiarities of traumatic agent. The least damaging,

guillotine amputation was only in 8 (8,2%) cases, traction - 18 (18,4%), traction and crushing (peel and crush) - 60 (61,2%), blunt trauma - 12 (12,2%).

Among the surveyed patients trauma (separation) are often observed at the level of the shoulder 47 (47,0%) and 30 of the forearm (30,6%), brush - 21 (21,4%). Analysis of the activity and affiliates of RSCEM indicates that it prehospital still high mortality, life-threatening condition and shock severity of the general condition. These results are confirmed by the data on the state of the surveyed patients: on admission their general condition is medium-heavy 48 (48,9%), heavy 48 (48,9%) and very heavy 2 (2,2%). Except of traumatic shock they usually marked as hemorrhagic shock. In 76 (77,4%) patients on admission to hospital diagnosed with varying degrees of shock. The most severe shock is III degree was observed in 12 (12,2%) patients with complete amputation at the shoulder. Although severe condition of patients was observed in 48 (48,9%) patients, in spite of all available evidence, anti-shock event held only 44 (44,9%) patients. As the nature of the injury (complete or partial amputation of a large segment of the limb) and traumatic factor in 100% of cases requires from the first minute of injury to start anti-shock event (enter painkillers, hormones, carry out proper immobilization, stop bleeding, etc.). In main mass of victims - 75 (76,5%) the duration of anoxia of damaged limb segments is mostly 1-3 hours. Based on the degree of preservation of functionally important structures, as well as the degree of recovery of limb function 20 victims, it was decided to make the amputation and formation the stump for subsequent prosthetics.

The examination of patients with complete and partial amputation of limbs revealed adequate immobilization was performed in 24 (24,5%), inadequate 56 (57,2%) and absent in 18 (18,3%). In 32 patients examined fixed finite or her segment was not necessary because of its complete amputation. In 66 (67,4%) cases diagnosed incomplete amputation: they needed a proper immobilization. It is preventing further damage and trauma, pain, can prevent an increase in the degree of severity of the shock and the general condition. In 78 patients (79,6%) at the initial examination revealed preservation of limb segment trauma; In 20 (20,4%) cases were observed crushing most of the injured limb segment. Blood circulation condition of the injured segment as subcompensated diagnosed in 31 (31,6%) cases with incomplete amputations; decompensation installed in 67 (68,4%) patients.

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## PLANTAR ORTHOTICS FOR CHILDREN. CONSERVATIVE TREATMENT OF HALLUX VALGUS

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Accounting on international and domestic experience the materials used in orthopaedics and its technologies often create discomfort for patients. This especially

concerns special insoles, which are very laborious and lengthy in manufacture. The last is particularly important in regard to children because of their growth.

Orthopedic pathology of the forefoot leads in total amount of planned surgeries in adults. It occupies one of the first places in the world.

Normally idiopatic hallus valgus manifests by age of 5-7 or 8-10 years and is characterized by a progressive course of the disease. According to our data the proportion of boys and girls is 1:4.

It is generally accepted that the surgical treatment in this age is inappropriate and whereas the conservative treatment is confronted with skepticism. In this situation it is very important to find ways to suspend the development of deformation. We evaluated the results of 10-year observation (from 2005 till 2015). There were 40 patients with valgus deformation of hallux with 1-4 deformity range in 4 groups:

1. 10 children aged 6-7 years with the 2-4 deformity range.
2. 10 children aged 9-10 years with the 2-3 deformity range.
3. Group for comparison: 10 children aged 7-10 years old with the 2-3 deformity range.
4. A separate group: 10 girls involved in sports aged 11-14 years with 1-2 deformity range (fencing, tennis, gymnastics) All patients complained of pain and degenerative changes of first metatarsal-toe joint.

There were semi-annual control inspections and function tests of the forefoot.

All patients except group #3 were recommended to use rational mode of shoes, mode loads, and individual removable corrector by "Sursil-Ortho" technology. In regard to the ability of a material to remodeling, in some cases the degree of highness of the insole was gradually increased to enhance the correction.

The finished insole is 2-3mm. The front and rear are made from a soft material, which ensures the correct sequence of steps, dynamic correction when used in any conventional footwear. We did not use adduction braces for Hallux.

An obligatory part of the daily treatment was individual training, including muscles strengthening exercises performed twice a day. The group #4 was supplemented by a monthly course of "Traumel S" per os and locally, thermotherapy and magneto. This made it possible, while maintaining intense exercise to remove pain and get a good result.

Taking into account the data obtained, we believe that conservative use of idiopathic hallux vagus in children proves to be effective.

The usage of advanced materials and technologies assists in treatment of valgus child's foot.

This treatment should be carried out only by specialists and in specialized medical centers.

Tatiana Kulemzina

# KOMBINIERTE ANWENDUNG DER REFLEXZONENMASSAGE UND HOLODYNAMIK BEI PATIENTEN, DIE NOTFALLSITUATION ERLITTEN

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Eine Notfallsituation, die in einem bestimmten Gebiet als Folge der Sonderfaktoren entwickelt wurde, kann, unter anderem, eine Schädigung der menschlichen Gesundheit und Verletzung der Lebensbedingungen verursachen.

Die Patienten beiderlei Geschlechts im Alter von 50 Jahren, die einen Notfall innerhalb von einem Monat erlitten, wurden behandelt. Zum Zeitpunkt der Notfallsituation wurden die Patienten körperlich nicht verletzt und somit benötigten sie keine körperliche medizinische Notfallversorgung. Die Patienten kamen für die Behandlung in verschiedene Krankenhäuser innerhalb von 6 Monaten nach dem Notfall. Die Beschwerden der Patienten waren: Schlafstörungen, Übelkeit, Appetitlosigkeit, Gewichtsverlust, depressive Tendenzen, Verletzungen von Aufmerksamkeit und Gedächtnis, Schwäche, verlangsamtes Atmen und Atemnot, Zittern der Gliedmaßen, ständige Angst, psycho-emotionale Störungen mit einer Dominanz von Gefühlen der Verlegenheit, Verlangsamung der Bewegungen. Das Auftreten von Beschwerden haben die Patienten eindeutig mit der Einwirkung einer Notsituation verbunden. Die Beschwerden erschienen zuerst vorwiegend in der Nacht.

Zum Zeitpunkt der Aufnahme einer Behandlung des Reflexologists waren alle Patienten außerhalb der Notfallsituation. Jedoch hatten die Patienten Angst, im Falle der Rückkehr in die durch die Wirkung von einem Notfall betroffenen Gebiete, Wiederholung einer Notsituation zu erleben. Besonders besorgniserregend war die Angst vor dem Auftreten eines Notfalls in der Nacht. In Vorgesprächen mit den Patienten wurde festgestellt, dass ihre Reaktion auf das Geschehen als "Vermeidung" (Wunsch, die Szene zu verlassen) beschrieben werden konnte. Die Patienten beschrieben vorwiegend ihre Reaktion als eine "Panik". Solche Reaktion wird als "Desorganisation der geistigen Aktivität" bezeichnet.

Die von Patienten präsentierten Beschwerden wurden mit Syndromen der traditionellen chinesischen Medizin der inneren Organe (unter Berücksichtigung der physischen und psychosomatischen Erscheinungen) verglichen. Die Meridiandiagnostik erlaubte uns die Veränderungen im Nieren-Meridian, sowie Perikard, der Leber und den Lungen festzustellen. Diese Meridiane wurden als vorrangig für Reflextherapie bestimmt.

Eine 3-Gänge-Reflexzonenmassage in Abständen von 14 Tagen von jeweils 10 Behandlungen wurde durchgeführt. Während der ersten 10 Behandlungen wurde eine sedative Methode verwendet. Während der zweiten und dritten 10 Behandlungen wurde eine tonisierende Methode verwendet. Die Akupunkturpunkte der körperlichen, Ohr- und Schädeltopographie wurden eingesetzt. Die traditionelle Akupunktur, Durchwärmen, Schröpfen Massage sowie oberflächliche viele-Nadel Reflexzonenmassage wurden verwendet.

Holodynamik wurde als eine Richtung der praktischen Psychologie angewendet. Bei der Anwendung von holodynamischer Behandlung wurde das Ziel gesetzt, einer Person bei der Lösung von tiefen persönlichen und sozialen Problemen zu helfen. Die Holodynamik wurde aufgrund der nachgewiesenen Wirksamkeit der Arbeit mit Gedankenformen durch deren Verfolgung ausgewählt. Die Dauer einer Behandlung mit einer Gedankenform betrug durchschnittlich von 90 bis 120 Minuten. Die Resultate der Arbeit mit Gedankenformen der Patienten erlaubten uns folgende Schlussfolgerung zu ziehen: 75% der Patienten reflektierten sich selbst und ihre Reaktion auf die Situation; 25% reflektierten die Situation selbst. Während der gesamten Behandlung ist eine Kombination von Akupunktur-Sitzungen mit Holodynamik-Sitzungen angewendet worden, deren Vielzahl gleich 4 war.

Die oben beschriebene Kombination von Reflextherapie und psychologischer Orientierung erlaubte uns eine effektive therapeutische Wirkung zu erzielen.

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N.K. Kuzibaeva

## STUDY OF THE KNOWLEDGE LEVEL AND SKILLS OF SELF-CONTROL OF DIABETES IN CHILDREN IN ORDER TO PREVENT LATE COMPLICATIONS

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Purpose: Study of the knowledge level and skills of self-control of diabetes type 1 in children ages 6-14 years for development of prevention programs of late diabetes complications

Materials and methods of the investigation. The level of knowledge and skills in children was assessed with a specially composed questionnaire, which included 30 questions, intended at studying children basis knowledge of diabetes type 1 such as: principles of nutrition, effect of insulin, symptoms and measures in case of acute complications, holding of self-control (determinated level of fasting plasma glucose, postprondial glucose, glycosylated hemoglobin). 110 children with diabetes type 1 in age 6-14 years were questioned. All children were divided in groups with the age 6-10 years and 11-14 years and according to the experience of disease: the first group 4-7years, the second group - more than 7 years, the third group - 1-3 years.

Results and discussion: During the assessment of children competences on nutrition in diabetes, injection technique and insulin action, appearance reason of hypoglycemia, also in analyses of data characteristic of the behavior of the respondents were established: less than half of the patients (45 scores) in age of 6-10 in foods with contents of carbohydrate chose the necessary answers. In age group 11-14 years distribution of whole answers was 100%. Not was point high level knowledge about carbohydrate foods depending duration

of disease. With experience disease Since 1-3year part patient was with enough knowledge 50%, with experience 4-7 year 54%, more than 7year 50%. 73% boys and 84% girls of younger school age confirmed sticking to to their diets in accordance with their insulin therapy scheme; among middle schoolchildren it was 60% and 45% accordingly. It was observed that diet was not adequately kept among 23% boys and 10% girls aged 6-10 years, 30% and 50% children aged 11-14 years. The awareness of diet was stronger in small children than the older ones. It should be pointed out that the patients with a longer duration of disease decreased the regularity of diet rules. The proportions in all groups which did not keep the diet at all was as follows: with experience of 1-3year and 4-7 year - 2%, more than 7 years - 7%. Among 35% of younger children were aware of food restriction due to diabetes type1 whereas only 10% of older children agreed to it. Most part of the schoolchildren aged 7-10 years -50% girls and 60% boys as well as 80% and 82% children in age of 11-14 years thought that they can eat all but with certain exceptions.

Statistically significant difference by gender in children with the experience of more than 7 years, girls in 80% versus boys in 60% reported to know the rules of the diet. The assessment of the questions on injection technique of insulin showed that 25% of children aged 7-10 years and 20% of the older children were informed about characteristics of short acting insulin. In 30% cases younger schoolchildren and 60% of middle schoolchildren knew about recommendation to replace the needle on the syringe-pen one time a day, in 11-14year girls the result was higher than in boys (60% and 55%). However, only 20% of the first age group and 60% of the second group recognized that the needle should be replaced daily.

Relatively high competence was displayed by children with diabetes type 1 with a different disease experience on such issues as: place of insulin injection (85% to 96% patients from different typological groups); on necessity of raising a skinfold before injecting (90% up to 96% children with different experience of disease); 60% to 85% admitted that insulin is injected subcutaneously.

About recommendation to replace needle of the syringe-pen one time a day knew: 70% of schoolchildren disease experience of 1-3 year; 65% - 4-7 years; 55% with the experience of more than 7 years. It was also revealed that with the duration of diabetes less attention was paid to replacing the needle. Foundless unit weight the correct and full answers about basis characterizes of short insulin in children with difference experience diabetes and according from 10% up to 20% those who was asked. The correct answer that a diabetes patient should exercise came from 85% of younger schoolchildren and 90% of middle schoolchildren.

Availability of the knowledge on daily foot care, correct choice of shoes, which might prevent late complications and reduce the risk of developing of diabetes foot and amputation. In result of data found less level knowledgeable patients about this dangerous question. It was established that among schoolchildren aged 6-10 years 35% boys and 55% girls wrote a dairy, in schoolchildren aged 11-14 years - 25% and 34% respectively.

The rest part of the children did not write dairies or quite seldom. Should to The duration of disease seems to correlate with decrease in filling of dairy of self-control: about 42% of patients in the first group, 28,3% - in the second group, 13,45% - in the third group.

In question of measuring the level of glucose in blood most patients did it less than 4-6 time a day: 92% and 96% children aged 7-10 years and 11-14 years respectively. Among the schoolchildren with the 1-3-years of the experience it was 80%, with the experience of 4-7 year - 95% , more than 7 years - 95%. Only 35% of respondents measured the level of glucose in blood 4-6 times a day.

Outcomes: Studying the level of knowledge for controlling the disease revealed that the children with diabetes experience over one year lacked the necessary competences.

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## PREVALENCE OF CONGENITAL HEART DISEASES IN CHILDREN IN DUSHANBE

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Actuality: Currently in the structure of child morbidity and mortality in most developed countries at first place come congenital malformations (CM), half of which are congenital heart diseases (CHD).

CHD in the natural course are accompanied by a high mortality rate of children in the first months of life. In the absence of adequate, primarily surgical aid no more than a quarter of patients live to 1 year, half of whom are in critical condition.

Despite the long history of the study of CHD, many aspects of this problem are still not resolved: It is important to answer the question, which factors affect the prevalence of CHD. According to the literature, the incidence rates of CHD are a reflection of the ecological state of the environment, as well as one of the few criterias that reflect the genetic structure of populations.

Objective: To determine the prevalence of congenital heart diseases in children in Dushanbe.

Methods: The prevalence of CHD were analysed in children up to 18 years in Dushanbe over the past 3 years.

The results of the study. The incidence of children with CHD in 10,000 of the population has grown over the last 3 years in Dushanbe. So, in 2012 was - 56.8%, in 2013 - 48.58%, in 2014 - 50.29%.

In carrying out routine inspections in kindergartens and schools for the first time in 2012 - 32, 2013 - 34, in 2014 - 40 children were identified with CHD , perhaps low levels of CHD in children show that routine inspections were carried out by pediatricians rather than by non-specialists .

A survey of children with suspected CHD were conducted by children

cardiorheumatologists, ECG, echocardiography, X-ray diagnostics and consultation of employees of the Department of Childhood Illness number 2 TSMU.

The increase in the incidence of CHD was marked over the past 3 years in Dushanbe , so, in 2012 there were identified 194, in 2013 - 245, in 2014 - 282 children up to 18 years which are 21.23 per 1,000 children in 2012, 26 01 - in 2013, 32.4 in 2014.

The analysis of the Research Institute of Obstetrics and Gynecology for 2012-2014 demonstrated that antenatal screening study and testing of pregnant women from 8710 were found 17 vices in 2012 , from 11,065 - 14 malformation in 2013, from 10941 - 14 heart malformation .

The disability from CHD rises from year to year . The number of people with disabilities from the CHD in 2012 amounted to 123, in 2013 - 135, in 2014 r 163 children. The level of disability is highest among children in age group of up to 5 years.

The number of child deaths from CHD up to 1 year increased from 4 children in 2012 to 12 cases in 2013 - 2014.

In the Republican Scientific Center of Cardiovascular and Thoracic Surgery in Tajikisan were operated 1 child in 2012, 12 children - in 2013, 37 - in 2014 .

239 children with CHD need surgery.

Conclusion: CHD in children in Dushanbe tends to rise. Prevalence (total incidence) of CHD among the children in Dushanbe annually is 50 per 10,000 population. Annually about 30% children with CHD who are in need of surgical treatment receive surgical correction.The level of disability with CHD is increasing every year and above all among the children in age group of up to 5 years.

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Viktor Moroz
Arkady Goloubev

## COMPLEX DIAGNOSIS OF NOSOCOMIAL PNEUMONIA IN SURGICAL PATIENTS – ROLE OF CLARA CELL PROTEIN AND SURFACTANT PROTEIN D

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The objective of the investigation was to estimate the informativity of plasma Clara cell protein (CCP) and surfactant protein D (SPD) in the diagnosis of nosocomial pneumonia in surgical patients.

Materials and methods. The observational study in ICU ventilated septic patients with peritonitis (70%), pancreonecrosis (25%) and mediastinitis (5%) was done in 2010-2015. Nosocomial pneumonia was diagnosed according to the Russian National guidelines. ARDS was diagnosed and staged according to the V.A. Negovsky Research Institute criteria. Plasma CCP and SPD were measured on day 0, 3 and 5 by the immunoenzyme essay (BioVendor, USA). Patients were treated according to the international guidelines.

Data were statistically analyzed by STATISTICA 7.0, ANOVA and presented as median and 25 to 75th percentiles (ng/ml); $P < 0.05$ was considered statistically significant. Areas under the receiver operating (ROC) curves were calculated.

Results. 65 patients were enrolled (out of 312 screened). Patients were assigned into groups: NP + ARDS (n = 43, 43 ± 4.9 years old, M/F 39/4, mortality 23%); NP (n = 22, 40 ± 5.1 years old, M/F 20/2, mortality 18%); no NP (n = 25, 42 ± 5.1 years old, M/F 22/2, mortality 17%). Groups were comparable in APACHE II and SOFA scores on the baseline. In patients with NP caused by Pseudomonas aeruginosa plasma CCP was significantly lower at all points than in the patients with no Pseudomonas aeruginosa detected. Plasma CCP on day 0 had a good capacity for the diagnosis of Pseudomonas aeruginosa NP: CCP on day 0 ≤ 17.5 ng/ml yielded a sensitivity of 92.7% and specificity of 72.0% (AUC 0.84; 95% CI 0.713 to 0.926; P = 0.0001). In the NP + ARDS group SPD was higher at all points than in the NP group. Plasma SPD on day 0 >111.2 ng/ml yielded a sensitivity of 68.2% and specificity of 92.3% (AUC 0.85; 95% CI 0.684 to 0.945; P < 0.0001) for diagnosing ARDS in NP. P/F ratio on day 0 <280 yielded a sensitivity of 94.1% and specificity of 76.9% (AUC 0.89; 95% CI 0.744 to 0.952; P < 0.0001) and EVLWI on day 0 >8.3 ml/kg yielded a sensitivity of 94.1% and specificity of 92.3% (AUC 0.92; 95% CI 0.810 to 0.982; P < 0.0001) for the diagnosis of ARDS in NP. A complex ROC analysis (for SPD in the group of patients with P/F <280 and EVLWI >8.3) yielded a much better diagnostic accuracy of SPD: cutoff >93.7 ng/ml, sensitivity 81.0%, specificity 100.0% (AUC 0.96; 95% CI 0.817 to 0.998; P < 0.0001).

Conclusions. A complex approach – CCP ≤ 17.5 ng/ml + [P/F <280, EVLWI >8.3, SPD >93.7] presents as a sensitive and highly specific method for diagnosing NP and ARDS in surgical patients.

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## HEPATIC MANIFESTATIONS OF METABOLIC SYNDROME

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The objective of the research was to determine characteristics of hepatic manifestations among patients with metabolic syndrome (MS).

Materials and methods. We observed 107 patients with MS, which was diagnosed according to the generally accepted criteria. All patients had liver function tests: ALT, AST, bilirubin, albumin, prothrombin, alkaline phosphatase (ALP), cholesterol, high density lipoproteins (HDL) and low density lipoproteins (LDL). We also carried out an ultrasound of the abdominal cavity to determine the size of the right and left hepatic lobes and their structure. We also assessed the Knodell histological activity index, Brunt fibrosis score and laboratory fibrosis index which took into account age, body mass index, glucose, platelet, albumin levels and AST/ALT ratio.

Results. All patients (100%) had indications of non-alcoholic fatty liver disease

(NAFLD): 75 (70.1%) – steatosis hepatitis, 32 (29.9%) – steatohepatitis (18 (56.3%) had low activity and 14 (43.7% had moderate activity steatohepatitis). Steatohepatitis was characterised by an increased liver, 145±23 mm in the right lobe and 76.7±9.3 mm in the left lobe, and an increased liver echogenicity during the ultrasound. Liver function tests were normal, but ALP level was reaching the upper limit of the norm and made up 200.5±51.07 units/l. The laboratory fibrosis index was 0.402±0.02. Blood lipids showed a disturbed picture: cholesterol was 5.7±1.3 mmol/l, LDL – 4.32±2.01, HDL – 1.45±0.68, TG – 2.74±1.84 mmol/l. Liver synthetic function was not damaged, albumin level was 48.7±2.3 g/l.

Patients with steatohepatitis also had moderate necrotic inflammation and fibrosis. The ALT level was 86.3±26.9, that of AST – 49.1±14.2 units/l, the Knodell histological activity index – 6.5±2.3, Brunt fibrosis score – 1.8±0.5 and that of laboratory fibrosis index – 0.69±0.1. The histological activity index and the laboratory fibrosis index were closely correlated, r=0.85, p<0.01. Intrahepatic cholestasis was progressing, ALP was reaching up to 296.4±165.5 units/l, liver dimensions were increasing, the right lobe – 165.2±15.2 mm, the left lobe – 79.9±13.9 mm. Indicators of lipid metabolism in patients with steatohepatitis were worse than those in patients with steatosis hepatitis: cholesterol – 6.36±0.7, LDL – 4.65±1.9, HDL – 1.26±0.6 mmol/l, TG – 3.2±1.8 mmol/l. The albumin level decreased to 38.7±3.1 g/l. To assess the influence of metabolic syndrome on the functional and structural liver condition, we determined correlation coefficients between MS markers and liver function tests. The closest and most direct correlation was determined between ALT and AST with TG: –r=0.78 (p<0.05); r=0.74 (p<0.05), respectively, and, inversely, with HDL: r=-0.74 (p<0.05); r=-06.9 (p<0.05), respectively, and ALP with TG: r=0.73 (p<0.05) and HDL: -r=-0.65 (p<0.05). This proved the largest damaging effect of tryglicerides on hepatic cells, which initiated necrosis of hepatic cells and intrahepatic cholestasis. The lipid panel parameters correlated with the liver dimensions, but to a lesser degree than with laboratory liver tests. The most available metabolic syndrome marker – waist measurement – had a weak correlation with ALT, r=0.34, and cholesterol – r=0.33, and a strong correlation with the dimensions of the left lobe – r=0.59 (p<0.05), of the right lobe –r=0.47 (p<0.05), TG level – r=0.42 (p<0.05) and ALP, r=0.42 (p<0.05).

Conclusion. Hepatic manifestations were detected among all patients (100%) with metabolic syndrome; 70% had steatosis hepatitis and 30% steatohepatitis. Hypertriglyceridemia had the largest effect on the development of the hepatic cell inflammation and intrahepatic cholestasis. The waist measurement was a direct reflection of the triglyceridemia and ALP levels, that is why it can be used not only as the most available marker of the metabolic syndrome, but also as a surrogate marker of the intrahepatic cholestasis.

Lili Luzina-Chju

## INTRODUCING A NEW BOOK "BASICS OF TRADITIONAL CHINESE MEDICINE"

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Six years ago we published a big book called "Basics of Traditional Chinese Medicine" together with one Chinese doctor where we described in detail application of methods of Traditional Chinese Medicine.

This book was released in Russian. Now this book went to public in English where we included in every detail the following methods: cauterization, gua-sha, mai-hua-zhen, cupping, chi-kung plus belly button applications plus clinical nutrition of course. We did not cover such topics as acupuncture basics because there are a lot of such publications in the world. But the belly button application can be hardly found anywhere and the mechanisms of cauterization are not very often described. As a result of long experience and practice we decided to include the following topics into this book: treating thyroid dysfunctions, skin diseases and biliary tract dysfunctions. These topics were also published in the form of separate small editions in Russian before. Now they are included in the big book in English.

Three kinds of dysfunctions are covered in every detail in this book, which are the result of our serious long-term work. For example, we took two groups of patients one of which consisted of people who did not have any biliary tract dysfunctions and the second group was formed from those who suffered from biliary tract disorders. During 24 hours we have detected and described daily biorhythm of electrodermal resistance and temperature in acupuncture points area. The analyses of this detection showed that the data in different groups were different. The symptoms were acute at 7 a.m. and at 3 p.m., and when we applied needles at this time the effect of the treatment was the most optimal. The name of this method is chronoacupuncture.

Various issues for discussion related to modern classifications of thyroid diseases are reviewed. The scanty literature data related to the usage of reflexology in dysfunctions and disorders of the thyroid gland are analyzed and generalized. The applicability and safety of the use of reflexology in autoimmune diseases of the thyroid gland is substantiated based on modern data on the etiology, pathogenesis, and clinical manifestations of hyper- and hypothyroid syndromes, concepts of neuroendocrine immune mechanisms of reflexology, and the methodology of traditional eastern medicine. General principles and specific recommendations on the usage of acupuncture and thermopuncture in patients with hyper- and hypothyroid syndrome are presented. Indications and contraindications to reflexology in the pathology under consideration are presented.

It is recommended by the Educational and Methodological Association on Medical and Pharmaceutical Education in Institutions of Higher Learning in Russia as an educational aid in courses of general advanced training (professional retraining) and postgraduate training courses for physicians in reflexology.

Recently there have been published many monographic research books comprising some chapters devoted to the usage of acupuncture (zhen-zu thera- py, acupuncture) in treatment of skin diseases. There has been applied a set of acupuncture points, primarily aimed at the relief of such and such symptoms of a disease and, in addition, has been dominated the so called prescription approach in all available medical literature. In the classical treatises on zhen- zu therapy, and in some books published in China skin disease are considered to be a manifestation (a consequence) of an organism's visceral or other physiological systems which are called acupuncture channels in traditional Chinese medicine (zin-lo or "meridians" in European medicine). In this connection it's worth focusing on the main concept of the medicine in the Middle State: an organism is a single entity all processes thereof, including pathological ones, are interconnected and interdependent.

Analyzing medical literature dealing with the treatment of skin diseases both of European and Oriental origin I have paid attention to the fact that acupuncture and heating are indicated widely. Probably that is stipulated with usage of zhen-zu therapy by ancient Chinese doctors as a compulsory measure, and European authors of monographic research books have followed the text of translated treatises bona fide.

If we study traditional European monographic research or reference books dealing with skin diseases' etiology and pathogenesis, we can see that the majority of the most widespread derma involvements are considered to be multifactorial.

It is also worth notice that in all times all doctors treating skin diseases observe their chronic and obstinate character, inclination to recurrence. That is why the search of new methods, new approaches to the therapy of skin diseases is a great challenge nowadays.

Taking into consideration this situation we believe that it is possible to share our long-term experience of the usage of acupuncture and heating (zhen- zu therapy) for treating some skin diseases, such as eczema, neurodermatitis, alopecia areata, psoriasis. This work is based both on Chinese sources, and on some European colleagues experience too.

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## MONITORING OF DRUG RESPONSE IN PATIENTS WITH ISCHEMIC HEART DISEASE USING GENETIC MARKERS

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At present, an approach demanding individualized treatment for each patient has emerged.

Objective: To make a comparative evaluation of the effectiveness of lipid-lowering correction of lipid metabolism synthesis inhibitors (rosuvastatin at a dose of 10 mg per day) and absorption (ezetimibe 10 mg per day) cholesterol in the form of mono- or combination therapy in patients with coronary artery disease, stable angina I-II functional class (FC) in combination with primary hyperlipidemia with the pharmacogenetic principles.

Materials and Methods: The study included 120 men with ischemic heart disease, stable angina FC I-II with primary hyperlipidemia, belonging to the group of very high risk for cardiovascular complications, aged from 41 to 60 years, without or after withdrawal of statins, not later than 3 months before the screening stage.

The study was conducted by a prospective method. The pharmacological correction was started with drug rosuvastatin in doze 10mg per day. In the absence of a sufficient effect in terms of LDL cholesterol (1,8 mmol / l) during rosuvastatin intake within to 8 weeks of the study, the patient was transferred to combined therapy with the addition of ezetimibe to 10mg per day dose, in accordance with current recommendations for the diagnosis and correction of lipid exchange.

To find research criteria for the individual application of lipid-lowering drugs polymorphisms the following genes were genotyped: cholesteryl ester transfer protein - CETPTaq1B, lipoproteinlipase – LPLNindIII, endothelial NO-synthase - NOS3-786T> C, angiotensin-converting enzyme - ACE I / D.

The results:

1. Inclusion of ezetimibe 10 mg / day in the scheme of lipid-lowering therapy based on the use of rosuvastatin 10 mg / day enabled to obtain the target values of LDL cholesterol in 30% of patients with coronary artery disease, stable angina with hyperlipidemia.
2. The degree of lipid-lowering effect as in mono- and dual therapy had no direct relationship with the severity of the pleiotropic effects of rosuvastatin 10 mg / day in patients with coronary artery disease, stable angina FC I-II in combination with primary hyperlipidemia.
3. In monotherapy with rosuvastatin 10 mg / day + 279AA genotype polymorphism CETPTaq1B associated with higher levels of hyperlipidemia cholesterol by 27% in comparison with genotypes + 279GG / GA (16,7%).
4. Genotype + 495GG and -786CC polymorphisms LPLHindIII and NOS3-786T> C defines a large susceptibility to disturbance of lipid metabolism due to high atherogenic lipid fractions transport system before treatment and low effectiveness of rosuvastatin 10 mg / day.

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## THREE-YEAR RESULTS OF STENTING OF BIFURCATION STENOSES OF THE LEFT MAIN CORONARY ARTERY

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Aim: using objective methods of intravascular imaging to evaluate the results of bifurcation stenting stenosis of the left main coronary artery.

Methods: three-year results of endovascular treatment of patients with true bifurcation

stenosis of the left main coronary artery were evaluated in 94 patients, of whom 48 patients were using one stent technology "provisional - T", and while 46 were stented "two stent" techniques. All interventions were conduded by final dilation by "kissing- balloon" high pressure balloons and under IVUS guidence. Long-term results were assessed by following criteria: frequency of cardiovascular complications (death, myocardial infarction, re-intervention), IVUS data (residual area of vessel lumen in the proximal segment of left main, zone of bifurcation, the ostia of anterior descending artery and circumflex artery). Decrease in diameter in remaining lumen > 70% coas considered as criteria for restenosis.

Results: Survival amongest patients in late period was 97,9%, 2 patients died from non-cardial causes. The frequency of cardiac events in both groups was 8.3 and 4.3%, respectively (p 0,05). Restenosis rate according to IVUS in the body trunk of the left coronary artery and anterior descending artery Stavila 0%. Restenosis of the circumflex artery to IVUS was found to be 14,5% and 4.3% of cases (p 0,001). Repeated revascularization was needed in 4.2 % of patients from group 1 and 2.2% in patients of group 2 (p 0,05). Stent thrombosis was not detected in either group. The average residual area of the lumen of the left coronary artery in the proximal part, after " T – provisional" was stenting 7,89+0,03, and after a full bifurcation stenting of 8.0+0.02 mm2 (p 0,05), at the ostia of the circumflex artery 5,62+0,12 and 5,98+0,01 mm2 (p 0,05), at the ostia of the anterior descending artery 6,62+0,03 and 6.78+0,04 mm2. These results did not significantly differ compared to the same 12 months of observation.

Conclusion: the study demonstrates that the use of objective methods of visualization of coronary arteries in patients with bifurcation stenosis of left coronary artery as a method of monitoring the results of stenting, as well as adequate final dilation "kissing balloons" high pressure leads to low frequency of cardiovascular complications and restenosis in long-term period,that have a positive impact on the prognosis of such patients.

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## THE USE OF 3D TECHNOLOGY IN TEACHING THE FOUNDATIONS OF MEDICAL KNOWLEDGE

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The quality of education largely depends on a balanced organization of a specialist's training to meet the needs of society and an individual. To ensure the quality of education the use of modern technology is essential in the educational process. The subject of morphology, especially anatomy is no exception.

Our study's aim was to determine the effect of the use of digital technologies in the teaching of anatomy. Thus, we have implemented the following activities:

- the existing methods of teaching anatomy were analyzed;
- modern interactive forms of teaching the subject were explored;
- modern technologies recommended for teaching were identified;

- tests that determine the effectiveness of this method were developed;
- appropriate measures were applied to attract students to the process of teaching anatomy with modern technologies;

In terms of training of highly qualified medical staff teaching anatomy is extremely important and makes it relevant for the application of modern technologies and innovations. Classes with the implementation of computer technologies have certain features. Thus, the dynamic video images improve visual memory, the teacher explanations enhances the activity of the acoustic analyzer, the student's writing the tactile feeling.

At the Azerbaijan University of Languages the study on teaching of anatomy using 3D technology was carried out by us in the fall semester of the 2013 - 2014 academic year. Thus, eight groups were selected from the Azerbaijani and Russian sectors. In four groups 3D technology was used for the teaching process (experimental group) and in the other four groups traditional methods of teaching were used (control group).

To determine the effectiveness of the experiment tests were conducted after the completion of the different training courses. Therefore, the test questions were prepared in accordance with the taught material.

Neither the experimental nor the control groups contained students that were able to answer all the questions correctly. In the experimental group the correct answers amounted to 75.6%, and wrong answers to 24.4%. It is interesting to note that no unanswered questions were observed in the experimental groups. In the control group, 54.3% of the questions were answered correctly. Wrong answers amounted to 33.6%. 12.1% of the questions remained unanswered.

In the experimental group students got more right answers than in the control groups (75.6% vs. 54.3%). However, the amount of wrong answers in the control groups was higher than in the experimental group (33.6% vs. 24.4%). An interesting point is the absence of unanswered questionsin the experimental group. The control group left 12.1% of the questions unanswered. This suggests that the experimental groups contained no students that did know any information on the questions asked.

Thus, the study shows that the use of 3D technology for the teaching of anatomy contributes to a deeper understanding of the subject. It also increases the desire to study the subject that is the base of medical knowledge.

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S.V. Kolbasnikov

## ASSOCIATION BETWEEN ANXIETY AND DEPRESSION DISORDERS AND QUALITY OF LIFE IN HYPERTENSIVE PATIENTS WITH HYPERURICEMIA

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An abnormally high level of uric acid (UA) is revealed in 25-50% of patients with arterial hypertension (AH) and viewed as an independent prognostic factor for increased

mortality. Hyperuricemia (HU), being a component of metabolic syndrome, impacts the progression of AH and aggravates the quality of life and prognosis. To develop a patient's individual follow-up program, it is of importance to study in detail their phycho-emotional status and quality of life.

The objective of the study was to determine an association between severity of anxiety and depression disorders and quality of life in hypertensive patients with HU.

Material and methods. This cross-sectional study enrolled 58 subjects (men – 16, women – 42); the mean age of the subjects was 62±1,9 y.o. Criteria for enrollment were presence of 2nd degree AH, history of AH prior to joint pathology. Patients with diabetes mellitus and renal impairment were excluded from the study.

The subjects underwent clinical examination, had serum uric acid test done, were tested with the SF-36 Questionnaire and HADS. Quality of life was assessed using 8 subscales of the SF-36 Questionnaire: physical functioning (PF), role performance (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), emotional role functioning (RE), and mental health (MH). The HADS included 14 items that assessed anxiety and depression. Scoring was accomplished by summing scores for items, 0–7 meaning no anxiety / depression, 8–10 -- subclinical anxiety / depression, 11 or higher – clinical anxiety/ depression.

Depending on the UA level – 360 μmol/L and higher – the subjects were assigned to one of the two groups: Group 1 (control group) included 35 hypertensive patients without HU (men – 10, women – 25, mean age -- 62.1 ±1.5 y.o., AH duration -- 9.1 ± 3.5 y.); Group 2 (study group) included 23 hypertensive patients with HU (men – 6, women – 17, mean age -- 63.3 ±2.05 y.o., AH duration -- 16.89 ± 4.35 y.), HU being accompanied by a joint pathology (rheumatic arthritis, osteoarthritis) in 14 patients.

Results. In the control group, anxiety was absent in 50% of the subjects, 30% presented subclinical anxiety, 20% presented clinical anxiety. In the study group, the results were 24%, 26% and 40% respectively. In the control group, depression was absent in 90% of the subjects, 10% presented subclinical depression, 0% had clinical depression. In the study group, the results were 23.7%, 31.6% and 44.7% respectively.

The hypertensive patients with HU scored statistically significantly lower that the controls: RP – 5.8 times ($p<0.001$); RE – 4.2 times ($p<0.001$); SF – 1.7 times ($p<0.001$); GH – 1.6 times ($p<0.02$); PF – 2.9 times ($p<0.001$). Subjects in Group 2 had 2.5 times higher score for BP ($p<0.01$) that indicated limitations in daily activities, increased emotional tension and evident somatic pain. The study showed correlation between the severity of depression and GH ($r=-0.45$), VT ($r=-0.5$), MH ($r=-0.47$).

Conclusions. The study has revealed that progressive anxiety and depression disorders in hypertensive patients with HU associated with significant aggravation of quality of life (especially its psychological component) may hamper treatment and prevention, which should be taken into consideration while developing individual follow-up programs.

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## AGGREGATION OF BLOOD CELLS IN PATIENTS WITH ARTERIAL HYPERTENSION AND DYSLIPIDEMIA

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In Russia, there is still a high prevalence of cardiovascular diseases with a large proportion of arterial hypertension (AH) among them. AH is increasingly combined with metabolic disorders, which have a negative impact on the rheological and haemostatic properties of blood. Prominent among them is dyslipidemia (D), which significantly worsens the prognosis.

It is known that AH with D adversely affects structural and functional properties of blood cells, eventually impairing the process of microcirculation. High content of atherogenic cholesterol accompanied by hemodynamic disturbances and the weakening of the antioxidant activity of plasma leads to the activation of lipid peroxidation (LPO) in the body of these patients. Developed changes can inevitably enhance the aggregation of blood cells, which impairs blood rheology especially when it passes through the microvessels. Therefore, the assessment of disruption of aggregational properties of blood cells in patients suffering from AH with D is of a great scientific and practical interest. This work aims to determine expression of the aggregation of blood cells in patients with AH and D.

The studied group included 380 middle-aged patients with AH of the 1st-2nd degree, having the risk factor of 3 and the type IIb dyslipidemia. The control group consisted of 26 healthy subjects of similar age.

The expression of the spontaneous aggregation of erythrocytes was determined by counting the units of aggregated erythrocytes, the number of aggregated and free erythrocytes in the Goryaev chamber using the light microscope.. The activity of platelet aggregation (PA) was detected by the visual micromethod. The phase contrast microscopy was applied to evaluate the intravascular platelet aggregation. The ability of neutrophils to aggregate was measured in a neutrophil suspension prepared from washed and resuspended neutrophils by using photoelectro-colorimeter. The Student t-test was performed for the statistical analysis of the results.

In studied patients we observed the increase (to 64.9%) of the total erythrocyte involvement in aggregates in blood, the increase (to 46.7%) in the number of aggregated units and the 57.8% decrease in the content of the freely moving erythrocytes. At the same time, in patients with AH and D we saw a pronounced reduction in the development time of PA. At the earliest, PA occurred with collagen, a little later with ADP. Even later, PA came with ristomycin, hydrogen peroxide, thrombin and adrenaline. The process of PA with combinations of inductors was also accelerated. At the same time, the number of freely circulating aggregates of various size and the level of platelet involvment in them was definitely higher in studied patients compared to the control group. In all studied

patients, the neutrophil aggregation was enhanced as compared with the control group for all tested inductors (to 57.7% with lectin, to 32.4% with concanavalin A, to 38.6% with phytohemagglutinin).

Thus, enhanced aggregation of blood cells is characteristic of the AH with D.

S.O. Medvedeva
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## PSYCHO-EMOTIONAL DISORDERS AND THE STATE OF THE VASCULAR WALL RIGIDITY IN HYPERTENSIVE PATIENTS WITH BRAIN DAMAGE

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Introduction: It is found that in hypertensive patients with an increase in vascular age, compared to the real age, there are marked changes in elastic-tonic properties of the vascular wall, which forms the cardiac-cerebral syndrome. The influence of psycho-emotional factors on the elasto-tonic properties of the vascular wall remains poorly understood, especially in hypertensive patients according to the severity of cerebrovascular insufficiency.

Objective: To assess the state of the vascular wall rigidity in hypertensive patients with brain damage, with respect to severity of psycho-emotional disorders.

Materials and methods: survey of 133 Hypertensive IInd stage patients (40 men, 93 women; mean age 53,4 ± 1,5 years) who were under medical supervision of general practitioner and received combination antihypertensive therapy. They underwent clinical examination, questioning and testing using a questionnaire and scale of anxiety and depression (HADS). Arterial rigidity was studied by the Photo Plethysmographic method by using the apparatus "Angioscan-01 Professional" (Russia). Depending on the severity of cerebral disorders, patients were divided into 2 groups: 1st had 11 hypertensive patients without cerebral disorders (mean age 39,2 ± 11,3 years) and 2nd had 122 hypertensive patients (56,3 ± 10, 4 years) with cerebral disorders. Among patients in group 2 initial manifestations of insufficient blood supply to the brain were among 17 people, Discirculatory encephalopathy (DE) I stage - 62 people and DE stage II - 43 people.

Results: In patients of the first group, blood pressure was 128,6 ± 13 / 84,7 ± 10,2 mm Hg.. According to the Hospital Anxiety and Depression Scale (HADS) 10 (90.9%) patients were without symptoms of anxiety (anxiety level was 4,8 ± 0,5 points). According to the scale of depression in 1 (10.2%) patients revealed subclinical depression, in 8 (72.7%) clinically depressive symptoms were absent (the level of depression was 3,0 ± 0,7 points) . During the pulse wave contour analysis in patients with the first group (VA) - 38,1 ± 14,5 years; (SI) - 7,9 ± 0,2 m / s; (RI) - 36,4 ± 5,6%; (Spa) - 121,5 ± 4,4 mm Hg. Article .; (Alp 75) - 3,47 ± 5,9%

Patients in group 2 blood pressure level was 142,3 ± 2,9 / 85,1 ± 1,5 mm Hg.

According to HADS scale in 24 (19.6%) patients clinically severe anxiety was detected , 29 (23.7%) patients showed severe subclinical anxiety, 56 (45.8%) patients were without any symptoms of anxiety (anxiety level was 7 8 ± 0,3 points; p <0,001). According to the scale of depression 6 patients (4.9%) had clinically severe depression, 35 (28.6%) - subclinical depression, and 67 (55%) patients with no symptoms of depression (depression level was 5,9 ± 0 3 points; p <0,001). According to the pulse wave contour analysis in patients in group 2 compared to the first noted the progressive deterioration of the elastic properties of the vessels, which was confirmed by a statistically significant increase in the index (Spa) - 137,9 ± 1,5 mm Hg. Art. (P <0,001), (Alp 75) - 16,1 ± 1,3% (p <0,05), (VA) - 54,9 ± 1,4 years (p<0,001).

Conclusions: In hypertensive patients with an increase in the severity of circulatory disorders, there is an increase in the frequency and severity of anxiety - depressive disorders, which are combined with an increase in the stiffness of the vascular wall, which should be considered in the chalking out of individual rehabilitation programs.

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## PROGNOSTIC INDICATOR FOR THE DEVELOPMENT OF INFECTIOUS COMPLICATIONS IN PATIENTS WITH SEVERE TRAUMA AND HYPOXIA

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Introduction. Severe trauma and blood loss lead to compensatory release of leukocytes from the bone marrow and blood depots in response to significant tissue destruction. The increase of leukocytes in the blood plasma of the patients immediately after the trauma is directed to the removal of products of cell death in the damaged tissues and the prevention of infectious complications.

Objective: to improve the accuracy of the prediction of infectious complications development in patients with severe trauma and severe hypoxia in the early stages after trauma.

Material and methods. We examined 28 patients (15 men and 13 women, aged 35.3±13.2 years (from 20 to 59 years) who underwent severe combined mechanical trauma. Patients were divided into two groups to assess the impact of hypoxia on DNA damage and death of white blood cells, based on the values of the 4 indicators, which reflect the presence or absence of hypoxia: pO2 of the capillary blood, lactate level, pH and BE of blood plasma. Group 1st - "Hypoxia «+»" - 18 patients with all 4 indicators (pO2 of the capillary blood, lactate level, pH and BE of blood plasma) on admission in to intensive care unit were changed and testified of hypoxia. Group 2nd - "Hypoxia «-»" - 10 patients on admission in to intensive care unit with all 4 indicators were within normal limits. Each

group was subdivided into two subgroups: infection «+» (13 patients in group 1st and 9 in the second group) and infection «-» (5 patients in group 1st and 1 in the second group). DNA damage in leucocytes, as well as indirectly apoptotic and necrotic leucocytes, were estimated using DNA comet assay method in alkaline and neutral versions. The analysis was performed by epifluorescence microscopy at magnification x200-400. Obtained from micropreparations images of DNA-comets were analyzed using CASP 1.2.2 software. As a quantitative measure of DNA damage the percentage of DNA in tail of DNA comets (% DNA in the tail of the total amount of DNA in the comet) was used. The data were statistically processed using Microsoft Excel (Microsoft Corporation, USA) and Statistica 6.0 (StatSoft Inc., USA) according to basic requirements for medical and biological data processing. Prediction of infectious complications was determined by logistic regression.

Results. In patients with severe trauma and severe hypoxia were increased the processes of cell death hypothetically by apoptotic and necrotic pathway, which is accompanied by increase of level of DNA single-, double-strand breaks. In dynamic were noted that on the 3rd day after the trauma the change of these indicators in the 1st group of patients differ in subgroups without (infection «-») and with (infection «+») infectious complications, which developed on the 5-7th day of observation. At 3 days after trauma in the group with hypoxia «+» infection «-» the level of necrotic [8.7 (2.3; 14.7) %] and apoptotic DNA comets [4.3 (2.5; 7.2) %], as well as DNA single-, double-strand breaks [27.3 (21.4; 32.5) %] was significantly higher than that in the group "hypoxia «+»" infection «+» [6.7 (4.5; 12.4) %; 4.3 (2.6; 7.2) %; 13.4 (10.2; 18.6) % respectively]. This data suggests that if the death of cells is more intensive in the first three days after trauma, that infectious complications are developed less likely. The death of cells by apoptotic and necrotic mechanism involving DNA single-, double-strand breaks in patients with trauma related, most likely, with the active participation of leukocytes in the prevention of infectious complications. In this connection, was made an attempt to sum of the values: necrotic DNA comets, apoptotic DNA comets and DNA single-, double-strand breaks on the third day after trauma with prognostic purpose. The ROC analysis of the integration index (necrotic DNA-comets+apoptotic DNA comet+DNA single, double strand breaks) obtained on day 3 after trauma in the group affected hypoxia «+» revealed: the value of the area under the ROC curve for total score at day 3 after trauma was 0.923 (sensitivity 100%, specificity - 75,0%). The cut-off point was 47.3% in total score. The value of the integration index below 47,3% indicates a high risk of developing infectious complications in patients with trauma and severe hypoxia. The total value of the index above 47,3% is a good prognostic sign, suggesting a low degree of probability of infectious complications development in these patients.

Conclusion: a method of early prediction of infectious complications development in patients with severe trauma and severe hypoxia, which includes the identification of integration index (the percentage of apoptotic DNA-comets, necrotic DNA-comets and DNA single-, double-strand breaks of leukocytes) by DNA comet assay was suggested.

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## MOTILITY DYSFUNCTIONS IN PATIENTS WITH COELIAC DISEASE

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According to different studies, motility disorders of the gastrointestinal tract may be an important pathogenic factor in the development of many gastrointestinal diseases, which are characterized by varied severity in abdominal pain and dyspeptic syndrome, or which may occur secondary during the long-term course of many digestive diseases. Coeliac disease is one of the best examples of chronic digestive disease, in which the clinical picture is characterized by combined motility disorders of various parts of the digestive tube and dysfunctions in sphincter system.

The aim of the study was to estimate motility and evacuation disorders of the gastrointestinal tract in adults with coeliac disease. 27 patients with coeliac disease, proved by positive results of upper-endoscopy, histology of duodenum biopsy specimens and HLA-typing, were examined. The age of the patients ranged from 19 to 57 years (mean age=38±13.85). Ten men and 17 women were included in the investigation. To study the functional motility disorders, all patients underwent peripheral electrogastroenterography (EGEG) using gastroenteromonitor GEM-01 "Gastroskan GEM" (scientific production association "Istok-System", Fryazino) in standard mode, according to the developed method.

As results of EGEG have shown, signs of disturbances in tonus and rhythmicity of the stomach and the duodenum, contraction discoordination between the stomach and the duodenum, the ileum and the large bowel, gastroesophageal reflux and duodenogastric reflux on an empty stomach and after standard food stimulation were found in the examined patients. According to the developed method, obtained values of basal and stimulated levels of the studied parameters were considered as markers of inadequate response of the stomach and the duodenum (the decline in absolute and percentage electrical energy, rhythmicity and amplitude parameters in food stimulation compared with basal values), hypertonus of the stomach (Pi/Ps above 34.0%) and the duodenum (Pi/Ps above 3.3%), contraction discoordination between the stomach and duodenum (comparison index above 16.0), as well as between the ileum and the large intestine (comparison index above 0.21), gastroesophageal reflux and duodenogastric reflux, motility retardation of the large intestine (rhythmicity index in food stimulation lower than 13.0). Isolated changes in motility and evacuation functions were not observed. The most common combinations were hypertonus of the stomach, its inadequate response to food stimulation with gastroesophageal reflux and contraction discoordination between the stomach and the duodenum. Contraction discoordination between the stomach and the duodenum were often combined with duodenogastric reflux. The hypertonus of the ileum and the jejunum on an empty stomach were often combined with contraction discoordination between ileum and large intestine.

The results of the wavelet analysis have shown that food stimulation had a positive effect on the elimination of duodenogastric reflux, but did not have a positive influence on the elimination of gastroesophageal reflux.

In conclusion, the EGEG data obtained have shown the need to improve pathogenic therapy of coeliac disease aimed at gastrointestinal motility disorders correction.

Keywords: coeliac disease, motility disorders, peripheral electrogastroenterography

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## THE ROLE OF THE TELOMERE TEST IN THE PROGNOSIS OF THE EFFICIENCY OF TREATMENT OF PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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Today, there are no generally accepted Russian standards for diagnostics and treatment of patients with non-alcoholic fatty liver disease (NAFLD). Among various methods of diagnostics of liver diseases, non-invasive methods are particularly interesting. One of the promising directions in the diagnostics of NAFLD is the application of the telomere test, consisting in the telomere length measurement, which was also the objective of our research.

We observed 58 patients with NAFLD who received identical therapy with the application of the telomere test (TT) in connection with hepatotropic therapy. According to the analysis of the ALT and AST liver enzymes activity values in connection with hepatotropic therapy, all patients were divided into three groups depending on the therapy response time. The normalisation of the liver enzymes activity in first group took place one month, in the second group –3 months, and in the third group 6 months after the beginning of the therapy. The evaluation of the telomere test made it possible to detect a length reduction in the end parts of leukocyte chromosomes in the peripheral blood of 12 patients (20%), 40 patients (70%) had normal quantity values of telomere base pairs and 6 patients (10%) had an increased telomere length. Having analysed the obtained data we determined that among patients with NAFLD, whose TT values were lower than the reference ones, the normalisation of the cytolytic syndrome took place one month after the beginning of the hepatotropic therapy. The cytolytic syndrome among patients with normal length values in the end parts of chromosomes regressed 3 months after the beginning of the therapy. Quite the contrary, patients with NAFLD who had the largest amount of telomere base pairs only responded to the therapy 6 months after its beginning.

This way, we determined a direct correlation between the length of base pairs and the normalisation time of cytolysis, which makes it possible to come to a conclusion that the

telomere test can be used for diagnostics of non-alcoholic fatty liver disease to predict the planned therapy and the state of disease.

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## RECONSTRUCTIVE SURGERY FOR TUMOURS OF THE BONE SHOULDER AND KNEE JOINTS

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Introduction

Over the past 50 years in orthopedic oncology the concept of organ-treatment of bone tumours was introduced. All this was made possible due to improvements in surgical techniques, the use of new schemes of chemotherapy, radiation therapy, hormone therapy and immunotherapy and. The use of grafts and stents allowed some patients to perform organ-surgical treatment for tumour localization in the long bones.

The aim of the work

To show the advantages of organ-surgical treatment of tumours of long bones.

Material and methods

17 patients (21.5%) with tumours of the proximal humerus underwent surgical treatment. If it affects the bones of the shoulder girdle after resection Tihova-Limberg a reverse shoulder prosthesis in 13 patients was performed and arthrodesis of the shoulder joint using vascularized fibular autograft – in 4 patients. Knee arthroplasty was performed in 62 (78.5%) patients, of which after resection of the distal femur in 40 proximal tibia tumour - 22.

Results and Discussion

After resection of the proximal humerus and shoulder joint arthroplasty of the shoulder joint function restored in 13 patients with arthrodesis with vascularized fibular autograft from the shoulder joint function restored in 3 patients. After knee replacement, joint function restored in 59 (95,2%) patients. Postoperative complications were observed in 14 (22,6%) patients with a median follow-up of 36 months. Of these, in 8 patients infectious complications were identified, in 2 - broken leg prosthesis, in 4 - aseptic loosening of the prosthesis stem. In 11 cases revision cases were performed. In 3 cases, the prosthesis was removed and knee arthrodesis using external fixation devices was performed. Length regenerate formed from 10 to 25 cm. After knee arthrodesis limb supporting ability restored in 2 patients. Amputation were performed in 2 patients with recurrent tumours.

Findings

Each type of reconstruction should be preceded by a thorough analysis of the particular case and selection of patients with the cancer and orthopedic aspects, as well as emotional and psychological status of the patient. Organ-surgical treatment for tumours of the bone helps to restore function and support ability of limbs and therefore improve the quality of life of these patients.

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# REHABILITATION OF PATIENTS AFTER KNEE ARTHROPLASTY FOR TUMOURS OF THE BONE

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Introduction

One type of surgical treatment of bone tumours is the individual endoprosthesis. Use of joint replacement in cases of tumour not only allows to save the patient's life, but also to keep supporting ability functioning limb. Rehabilitation of patients after resection of bone tumour and knee arthroplasty is known as an urgent problem in connection with extensive resection of bone and bone surrounding muscle arrays.

The purpose of the study

To improve the quality and speed up the recovery of patients after knee arthroplasty for tumours of bone.

Material and methods

The study involved 74 patients with malignant bone tumours around the knee who underwent arthroplasty individual cancer prosthesis. Surgical intervention was performed in the following amounts: resection "en block", replacement of post-resection arthroplasty bone defect, and in soft tissue defects surrounding bone additionally performed plastic displaced muscle flap in order to cover the implant. Postoperatively knee arthroplasty patients passed rehabilitation course to restore limb function in stages.

Results of the study

The study developed a comprehensive rehabilitation program that includes different periods after knee arthroplasty in patients with bone tumours. The program includes a set of tools designed for the rehabilitation of patients with different tumour localization (distal femur and proximal tibia) and the volume of surgical intervention, which included gymnastics, training on simulators and massage. The main features of the methodology of rehabilitation in patients after knee arthroplasty for tumours of the bones in the early postoperative period is: early isometric muscle training femur and tibia, which stabilize the knee and lower limb; exercises for the muscles of the shoulder girdle and adaptation to future walking on crutches; Early movement of the patient in bed; early development of knee function at late axial load; dosage load on the foot; crutches rise to 3-5 days after surgery.

Conclusion

As a result of the rehabilitation marked improvement in functional results of the lower extremity was observed in all operated patients. Improved functional outcomes after lower limb knee arthroplasty for tumours of the bone depends on the length and volume of bone resection removing the muscles surrounding the resected bone tumour.

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## THE USE OF MODERN INFORMATION TECHNOLOGY FOR ENHANCEMENT OF EFFICIENCY OF PUBLIC HEALTH ORGANIZATION

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There is no secret for anyone that Russian public health infrastructure has found itself in crisis for about 10 yars. According to most researchers, there are two main causes of this crisis: lack of health care financing and stagnation of its management system. In chronic shortage of financing, material and other resources that are necessary for effective functioning of system, the public health management plays a special role in this context. Its main objective is to provide accessible and qualitative medical care while minimizing the financial cost.

One of the elements of achieving this objective is an integrated management system of medical organization that has been developed and introduced in "City Clinical Hospital #1, in the city of Togliatti, Samara region. Availability of information system in the hospital has allowed us to receive the electronic patient's medical record and to have a real picture of material costs allocated for provision of hospital care (actual expenses on treatment). Within the frame of common information space FOR THE FIRST TIME the binding of financial elements of revenue and expenditure parts of service to the patient has been implemented. In a real-time mode the management personnel (deputy chief doctors) have possibility to monitor both medical process and its financial component (costs of drug therapy, clinical researches etc.) that allows to manage establishment expenses. The calculation of amount of drugs and medical products enables physicians to prescribe medicines based on a list of drugs available in stock without leaving their desks by using of electronic medical record information. The criteria developed by our specialists became one of the elements of information system allowing to estimate labor intensity and work efforts of medical personnel of a hospital and to pursue a policy of effective material stimulation of staff. In the "City Clinical Hospital #1" methods of funds distribution for incentive payments to medical staff based on assessment model of hospital care quality were developed and introduces. The technology of automated medical care examination put into practice became an element of work of quality evaluation of the personnel in the hospital.

Above-listed action items have reduced the number of unreasonable expenses for researches; the quantity of incorrect prescribing (or non- prescribing) cases and errors at filling of documents as well.

Despite all organizational-economic actions in our medical organization, directed on decrease in expenses, chronic deficiency of means on the Program of State Guarantees of Rendering of Free Medical Aid that has led to growth in the volume of paid medical services and patients' expenses on drugs. Unfortunately, the current public health situation in the region contributes to the formation of ideas about system of the state guarantees as a formal declaration that discredits the state and its institutes of social protection.

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# THE DYNAMICS OF LUNG MORPHOLOGICAL CHANGES IN EXPERIMENTAL CLOZAPINE-ETHANOL INTOXICATION

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Clozapine (8-chloro-11-(4-methyl-1-piperazinyl)-5H-dibenzo [b,e] -diazepin) is an antipsychotic of the second generation antipsychotic or so called "atypical" antipsychotic. It is characterized by intensive antipsychotic, neuroleptic, sedative, muscle relaxant, antiemetic effect. The drug is used to treat acute and chronic forms of schizophrenia, manias, bipolar disorders, various psychotic conditions. Clozapine has been approved by FDA to reduce the risk of recurrent suicidal behavior in people with schizophrenia or schizoaffective disorder.

The chemical structure of clozapine has elements of similarity with tricyclic antidepressants and partly with benzodiazepine tranquilizers.

According to the Russian authors, clozapine intoxication ranks first in the structure of criminal poisoning and accounted for 99.7% of all the cases that occurred in Moscow within the period from 2003 to 2006. The symptoms of intoxications caused by clozapine and ethanol are especially severe. The mortality reaches 30%.

Morphological changes in case of these poisonings are not specific. These are dyscirculatory disorders and degenerative changes in parenchymatous organs, brain edema, focal hemorrhages in the gastric mucosa, pulmonary edema, focal intraalveolar hemorrhage, distelectasis. There is also information about so-called clozapine-associated eosinophilic myocarditis in the literature. J. E. Meeker and K. Worm were the first to pay attention to it in 90-ies of XX century.

The aim of the study:

To study morphological changes in lungs in case of acute clozapine – ethanol intoxication.

Materials and methods:

We conducted a comparative study of histological sections of outbreed male rat lungs. The weight of the rats was 270-300 g. The first study group included 6 rats treated with clozapine (250 mg/kg per os) and ethanol (8,6 ml/kg). The animals were decapitated 3 hours after the drug administration. The second study group included 6 rats treated with clozapine and ethanol in the same dose and decapitated 24 hours after drug administration. The group of comparison included rats (6) which received neither clozapine, nor ethanol.

Results:

In the control group of animals no circulatory disorders, damage to the bronchial and alveolar epithelium, endothelium were detected. The alveoli were expanded, their lumens were intact. Itraalveolar walls were thin, the clusters of the cells (lymphocytes, segmented leukocytes, macrophages) were not observed.

Three hours after combined administration of clozapine and ethanol, marked hyperemia, multiple hemorrhages, alveolar edema, damage of the bronchial epithelium(desquamation), the lack of staining of endothelial cell nuclei were detected. Marked accumulation of

lymphocytes around veins and arteriovenous anastomoses was also observed.

24 hours after clozapine and ethanol administration the morphological changes became more severe. RBCs were observed in the lumens of the bronchi.

Conclusions:

Thus, the earliest morphological changes in lungs recorded in the study 3 hours after clozapine administration were disorders of microcirculation, distelectasis, focal hemorrhage in intraalveolar walls and alveoli. Later the changes became more severe.

These changes along with other data can be used to diagnose the cause of death in case of suspected clozapine -ethanol poisonings and to determine the exact time of the poisoning.

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## THE MORPHOLOGICAL CHANGES IN RAT LUNGS IN EXPERIMENTAL COMBINED CLOZAPINE-ETHANOL POISONING AND THEIR DYNAMICS

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Clozapine is an "atypical" antipsychotic or an antipsychotic of the second generation. It is characterized by intensive antipsychotic, neuroleptic, sedative, muscle relaxant, antiemetic effect. The drug is used to treat acute and chronic forms of schizophrenia, manias, bipolar disorders, various psychotic conditions. Clozapine has been approved by FDA to reduce the risk of recurrent suicidal behavior in people with schizophrenia or schizoaffective disorder.

Despite its high effectiveness, this drug is known for life-threatening side effects, such as agranulocytosis and cardiac complications. The most serious cardiac complications caused by clozapine, such as cardiomyopathy, myocarditis and pericarditis, are characterized by shortness of breath, heart and thoracic pain. In most cases, electrocardiographic changes, pericardial effusion, and nonspecific signs of inflammation are observed.

According to the Russian authors, clozapine intoxication ranks first in the structure of criminal poisoning and accounted for 99.7% of all the cases that occurred in Moscow within the period from 2003 to 2006. The symptoms of combined intoxications caused by clozapine and ethanol are especially severe. The mortality reaches 30%.

Morphological changes in case of these poisonings are not specific. These are dyscirculatory disorders and degenerative changes in parenchymatous organs, brain edema, focal hemorrhages in the gastric mucosa, pulmonary edema, focal intraalveolar hemorrhage, distelectasis.

The aim of the study:

To study morphological changes in lungs in case of acute combined clozapine –ethanol intoxication.

Materials and methods:

A comparative study of histological sections of outbreed male rat lungs was carried out. The weight of the rats was 270-300 g. 6 rats treated with clozapine (250 mg/kg per os) and

ethanol (8,6 ml/kg) were included into the first group. The rats were decapitated 3 hours after the drug administration. The second study group included 6 rats treated with clozapine and ethanol in the same dose and decapitated 24 hours after drug administration. The group of comparison included rats (6) which received neither clozapine, nor ethanol.

Results:

Three hours after combined administration of clozapine and ethanol, marked hyperemia, multiple hemorrhages, alveolar edema, damage of the bronchial epithelium (desquamation), the lack of staining of endothelial cell nuclei were detected. Marked accumulation of lymphocytes around veins and arteriovenous anastomoses was also observed.

24 hours after clozapine and ethanol administration the morphological changes became more severe. RBCs were observed in the lumens of the bronchi.

Conclusions:

Thus, in case of acute combined clozapine-ethanol poisonings the earliest morphological changes in lungs recorded 3 hours after the administration of these substances included disorders of microcirculation, distelectasis, focal hemorrhage in intraalveolar walls and alveoli. 24 hours after the poisoning the changes became more severe.

These non- specific changes along with the results of chemical analysis can be used to diagnose the cause of death in case of suspected combined clozapine -ethanol poisonings and to determine the exact time of the poisoning.

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## HIGH-FREQUENCY MECHANICAL VENTILATION IN ANTIBACTERIAL PROTOCOL IN NEUROSURGERY

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One of the perspective and difficult problems in neurosurgical intensive care unit is the treatment of nosocomial pneumonia (NP), which facilitates the risk of ventilator-associated pneumonia (VAP) development, as the result of mechanical ventilation, that increases 6-21 times and increases by 1-3% for each day of mechanical ventilation (Rello J, 2001). Due to high rates of NP and increased actuality of the problem, in 90-s "scientific minds" applied the term of "ventilator associated pneumonia" according to the domestic literature (Rudnov VA, 2001). VAP is a nosocomial pneumonia, developed 48 hours or more after trachea intubation and mechanical ventilation, without any signs of pneumonia during intubation (Beloborodov VB, 2006). However, it should be noted that in most cases manifestation of VAP in surgical patients may develop earlier. VAP is characterized by high prevalence among patients of this group and by high risk of mortality from 40 up to 80%. All these explain the significance of study of complications that develop during mechanical ventilation.

Objective: choice of respiratory support and application of antibacterial protocol in VAP and NP in neurosurgical patients on the basis of retrospective analysis of microflora, resistance to antibiotics and comparative analysis of mortality.

Materials and methods. We performed retrospective analysis of bacteriologic inoculations of sputum in 470 patients in neurosurgical intensive care unit from 2009 to 2013, who had NP (according to clinical and imaging examinations) during mechanical ventilation. The most common pathogenic flora was Gram negative microorganisms and their mixture: Kl.pneumonia (84%), Pseudomonas aeruginosa (78%), Enterobacteraerugenosa (8%); Gram positive flora: Staphylococcus aureus (3%), Streptococcus viridans (2%) and Candida (13%).

By virtue of the data of microbiological analysis and resistance to antibiotics, the following regimens of initial antibacterial therapy were applied: 1st regimen – Cefoperazone+Sulbactam (4 gr a day) and Amikacin (1.5-2.0 gr a day); 2nd regimen – Cefoperazone+Sulbactam (4 gr a day) and Levofloxacin (1 gr a day). Later antibacterial therapy was continued according to the results of bacterial examination of sputum. These antibacterial regimens were applies to 297 patients.

Respiratory therapy was performed in combination with traditional modes (SIMV, BiPAP, IPPV) and high-frequency jet ventilation (HFJV) in 173 patients with severe traumatic brain injury (STBI). Modes and their initial parameters:

CMV: $FiO_2$ 40-45%, $P_{asb}$ 30-35 mbar, $P_{ins}$ 15-20 mbar, PEEP >6 mbar

SIMV: $FiO_2$ 50-60%, $P_{asb}$ 20-25 mbar, $P_{ins}$ 10-25 mbar, PEEP >8 mbar

BiPAP: $FiO_2$ 50-60%, $P_{asb}$ 20-25 mbar, $P_{ins}$ 10-25 mbar, PEEP >8 mbar

HFJV: f 100 $min^{-1}$, VE 18-19 L, I:E 1:2 or 1:3.

Mechanical ventilation with HFJV mode was carried out for 1-6 hours 1-3 times a day depending on individual features and nosology; mean mechanical ventilation duration was 8.3 days. Ventilation parameters were set individually in all groups.

Results. We developed and applied the protocol of antibacterial therapy with two regimens and it was crucial factor in mortality decrease by 8% in these patients. The parameters of respiratory mechanics and gas exchange improved within the first day after application of HFJV ($PaO_2/FiO_2$ – 538.2, $PaO_2$ – 269.1 mmHg). The research results showed that HFJV does not have negative effects that can be seen in traditional modes. During the ventilation with this mode, intracranial pressure was lower and cerebral perfusion pressure was much higher, and $AVDO_2$ increased. Besides, regardless of applied ventilation mode, mean arterial pressure was in direct proportion to $SjO_2$ and in inversely proportion to $AVDO_2$. Mean mechanical ventilation duration decreased by 2.6 days.

Conclusions. Adherence to these antibacterial protocols and application of HFJV resulted in significant decrease in respiratory complications. HFJV have obvious advantages over other mechanical ventilation modes, and in complex therapy of intracranial hypertension. The entire therapy complex enables to decrease the intoxication signs, to reduce the duration of mechanical ventilation averagely by 2.7 days, the duration of stay in intensive care unit by 3 days, and decrease in mortality by 3.4%.

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# THE ANALYSIS OF MORTALITY CAUSES IN PREHOSPITAL AND HOSPITAL PERIODS IN SEVERE TRAUMATIC BRAIN INJURY

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Traumatism in people of young and active adult age has particular social significance among numerous problems of modern clinical medicine. According to the data of Konovalov AN et al., 2001, Klevno et al., 2001 and Sabirov DM et al., 2011, severe traumatic brain injuries (STBI) are 40 up to 50% of all injuries and is in the leading position in the structure of general traumatism. Mortality even in mild traumatic brain injury reaches 5-10%, while in severe injuries it ranges from 41 up to 85%. After performing comparative analysis, we can say that mortality has not decreased in last years despite of many researches in pathogenesis of primary and secondary injuries of the brain, development of modern diagnostic methods, treatment and rehabilitation of patients with STBI. The importance of the problem does not raise doubts as more than one third of injures people die on accident place before the arrival of emergency aid or during transportation to the hospital.

Objective: reveal dominant causes of prehospital and hospital mortality in patients with severe traumatic brain injury.

Materials and methods. We have analyzed 362 medical cases of the patients with STBI admitted to Republic Center of Emergency Medicine in last 2 years. 80% was men and 20% was women. Glasgow coma score was 8±3. Among these patients 55 died in different periods after admission. Mortality was 15.2% and 73% of them were men.

In prehospital and hospital periods after getting trauma during the first day 12 patients died (21.8%), during the first week 25 patients died (45.4%) and in later periods 18 patients died (32.7%).

Results and discussion. The cause of death in the first group patients (mean hospital stay duration was 18.7±5.5 hours; GCS in admittance 5±2) was cerebral edema because of brain contusion (n=6) with brain dislocation (n=4). In some cases edema was of destructive character and when brainstem was involved, the trauma was incompatible with life (n=2).

Mean hospital stay duration of patients of the second group was 45.6±15.9 hours and GCS was 7±3. The morphology manifested with the initial stages of necrotized brain tissue resorption, occurrence of active vascular-mesenchymal and glial reaction to the injury and hemorrhage resorption.

In later posttraumatic periods of STBI (mean hospital stay duration – 249.6±34.7 hours; SCG – 8±3) morphological picture was diverse. It was progressive development of

secondary infection resulted in cardiac-pulmonary failure (81%), rarely multiple organ failure (13%) and endotoxicosis (6%).

Conclusions.The outcome of treatment of patients with STBI substantially depends on degree and quality of medical aid in prehospital and hospital periods.

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## HISTOLOGICAL AND IMMUNOHISTICHEMICAL STUDY OF ATHEROSCLEROTIC AND SENILE CALCIFIC AORTIC VALVE STENOSIS

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Introduction: At the present time, there is no known therapy that can slow or reverse disease progression in patients with calcific aortic stenosis. Aortic valve calcification as a case of "degenerative" valve heart disease is the most frequent pathological process necessitating aortic valve surgical replacement. However, the signaling pathways following which starts calcification are not known.

Key Words: VEGF (vascular endothelial growth factor), CD31 – neoangiogenesis, macrophages, atherosclerosis, calcification.

Aim of the Work was to define the cellular mechanisms involved in aortic valve stenosis caused by senile and atherosclerotic calcification and to focus on the potential vascular and molecular mechanisms involved in the pathogenesis.

Materials and Methods: We identified 85 patients with aortic valve stenosis who underwent aortic valve surgical replacement (there ages were 34 -82). We examined human diseased valves: Senile aortic valve calcification and Atherosclerotic valve calcification (65 male and 20 female). All patients were admitted for aortic valve replacement. Patients had no history of rheumatic fever. The valves were examined immunohistochemically for signaling markers important for neoangiogenesis. Aortic valve leaflets excited during the valve replacement were fixed in 10% buffered formaline. Paraffin sections of calcific aortic valves were examined histologically and immunohistochemically to detect all features going within aortic valve calcification (new blood formation by VEGF, CD-31 and CD34 to detect neoangiogenesis).

Results: Examination of calcific aortic valves revealed: multiple blood vessels in central zone which are similar to atherosclerotic aortic stenosis compared to total absence in normal aortic valves (5 cases of the same age group from forensic autopsy). Inflammatory cellular infiltration is detected in both cases cells more having features of osteocytes were recognizable in isolate sever senile calcific stenosis. New blood vessels were detected by VEGF and angiogenesis detected by CD 31 and CD34.

Conclusion: The histological study of the senile calcific aortic valves demonstrates

features similar to atherosclerosis: lipid deposition, macrophages , fibroblasts infiltration and basement membrane disruption and some dissimilarities: massive inflammatory cellular infiltration, presence of prominent mineralization , small numbers of smooth muscle cells and abundant expression of VEGF ,CD34and CD31 newly formed endotheliocytes, compared to total absence in the normal aortic valves.

There are three major events or phases going within the senile calcific valves: inflammatory cellular infiltration, vessel formation de novo and endochondral ossification rather then passive deposition of calcium. From that point of view we can conclude that there is opportunity to novel therapeutic interventional strategies before and after surgical aortic valve replacement.

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## THROMBOPROPHYLAXIS IN PATIENTS WITH RHEUMATOID ARTHRITIS (RA) WITH NEW ORAL ANTICOAGULANTS (NOAC)

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Background: Patients (pts) affected by RA present an increased risk of venous thromboembolism, an important cause of morbidity and mortality. An increased risk of venous thromboembolic events (VTE) often determines the prognosis of disease outcome. It is important to determine risk factors of venous thromboembolic events in pts with RA (standard and associated with disease) for prevention of thrombosis. The gold standard for thromboprophylaxis is vitamin K antagonists (warfarin). However, warfarin has a number of disadvantages. That is why in recent years NOAC were synthesized. In contrast to warfarin NOAC are used in fixed doses, don't need routine monitoring, keeping diet, react with few amount of drugs.

Objective: To estimate efficiency and tolerability of dabigatran etexilate in pts with RA

Materials and methods: 13 pts (F:11, M:1) with definite diagnosis of RA were included, 57,9± 6,0 years old, duration of disease 3[2;13] years. All patients were examined in V.A. Nasonova Reasearch Institute of Rheumatology. RA was diagnosed in accordance with 2010 ACR/Eular criteria. Disease activity was expressed as DAS28 score, which is a composite score derived from tender joint count, swollen joint count, ESR and pts' global assessment of disease activity. All pts had thrombosis diagnosed by doppler ultrasound. Risk factors of thrombosis were examined including antiphospholipid antibodies (aPL) and markers of genetic thrombophilia. All pts had indications for prevention of VTE. Dabigatran etexilate in dose 110mg bid was used for prophylaxis in these pts. Follow-up

period was 24 weeks. Doppler ultrasound control was done on 0 and 24 weeks of taking drug. Coagulogram (APTT, prothrombin by Quick, INR, fibrinogen, thrombin time, fibrin monomers soluble complex) was investigated.

Results: 11/13 pts had VTE after RA was diagnosed, 2/13 before the beginning of disease. Duration of RA to the time of thrombosis was 54 [15;180] months. 10/13 pts had VTE in the setting of high activity of RA. 1/13 patients had thrombosis associated with operation (ankle fusion). No one of patients had aPL. 10/13 were diagnosed genetic thrombophilia: 1/13 in the factor V Leiden, 2/13 in prothrombin gene, 6/13 in fibrinogen gene, 9/13 in MTHFR gene. In coagulogram prolongation of APTT 36,47 ± 8,39 sec and thrombin time 129,13 ± 64,63 sec were noted. Cases of bleeding were not registered, there was 1 recurrence of thrombosis (after being in sitting position for 12 hours).

Conclusions: Despite of prolongation of APTT and thrombin time dabigatran etexilate did not cause bleeding, 1 case of thrombosis was registered after being in sitting position for 12 hours.

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## CHANGES IN THE INTESTINAL MICROFLORA AND ITS METABOLITES IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE

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According to numerous authors, over the last few years the most common chronic liver disease has become non-alcoholic fatty liver disease (NAFLD). For example, in 2007 NAFLD was diagnosed in 27% of Russians who turned to a general practitioner for help. Among a great number of factors which contribute to the development of NAFLD, a certain role is attributed to the distortion in the correlation between the intestinal microflora and its exometabolites, which determined the objective of our research.

We observed 25 patients with NAFLD. Methods of examination included questions, examination, quality of life assessment (SF-35 survey), clinical and biochemical blood tests, FibroMAX tests, bioimpedance analysis of the body composition and liver ultrasound as well as quantitative determination of the large intestine microbiota (real-time PCR method [qRT-PCR]) and compositional analysis of the blood metabolome. All patients received

innovative biologically active additives “Hepaguard Active” (Eurasian patent No. 019268 from 28.02.14), 1 capsule 3 times a day during meals in the course of three months. This BAA composition includes essential phospholipids, L carnitine and vitamin E.

Results of the research. The compositional analysis of the blood metabolome of patients before and after the treatment was carried out by means of gas chromatography with mass-spectrum detection using the equipment Agilent Maestro. Blood serum samples were mixed with equal amounts of cold methanol, were thoroughly blended and centrifuged (13000 rpm, 15 min). The supernatants were dried in the centrifugal vacuum concentrator LabconcoCentriVap and were stored at a temperature of -80°C. Directly before the analysis, each test tube with the dry residue received 20-50 μl of internal standard solution (tricosane,1 mg/ml) in pyridine and 30 μl of the silylating agent BSTFA (N,O-Bis(trimethylsilyl)trifluoroacetamide) and was kept at 100°C for 15 minutes. Then the obtained solution was used for the analysis. The separation was carried out by means of a Agilent HP-5ms column, 30 m×0,25 mm, stationary phase thickness being 0,25 μm. Chromatography conditions were as follows: injector temperature: 300°C; initial column temperature: 70°C; heating rate: 6°C/min; final column temperature: 320°C; gas carrier: He; flow rate: 1 ml/min. The compound identification in samples was carried out by comparing the mass spectra of the separated compound components with the mass spectra contained in the NIST08 Mass Spectral Library. As a result of the blood metabolome test among 25 patients before and after the treatment, we were able to identify more than 70 compounds: saturated carboxylic acids (C8, C10, C12, C14, C15, C16, C17, C18, C24); carboxylic acid nitriles, unsaturated carboxylic acids (C20:4, Linoleic acid [C18:2], C22:6, trans-9-Octadecenoic acid [C18:1]), succinic acid, urea, several amino acids, glycerophosphate, acid glycerides, various sugars, sugar alcohols, urea, uric acid, vitamins and a series of other compounds. We also observed qualitative and quantitative diversity in the compound composition and a certain tendency towards a general increase in the number of metabolites and their content in blood after the treatment.

In regard to the quantitative determination of the main bacterial groups in stool using the PCR method, the majority of patients was characterised by microbial imbalance (dysbiosis of the large intestine) which expressed itself, first of all, in a significant decrease of the bacteroid part (bacterial group with highly-developed glycobiome). It is known that the decrease of the bacteroid part in the microbiota of the large intestine is characteristic for overweight and obese patients and that the loss of weight together with low calorie diets is accompanied by a significant increase in the number of bacteroids, which, in its turn, can be an indirect criterion for the effectiveness of the suggested therapy. The increase of the bacteroid part among patients of this kind is associated with the improvement of energy exchange regulation and the risk reduction of metabolic syndrome development. In our research, after the therapy there was a significant increase of the bacteroid part (Bacteroides fragilis group) from 11.3% ± 10.6 (average± SD) to 47.6% ± 28.8 from the total number of microorganisms ($p < 0.0001$), which demonstrates the ability of the drug to restore the disturbed microbial balance in the large intestine associated with overweight/

obesity and risk of developing systematic metabolic disorders. In doing so, the increase of the bacteroid part did not disturb the balance of anaerobic representatives of the intestinal microbiota. It is important that the share of one of the main firmicutes representatives Faecalibacterium prausnitzii did not decrease, but even had a tendency to increase (from 0.9% to 1.7%; the difference is not significant). Against the background of the therapy all patients had a reduction in the initially increased body mass and positive dynamics in the clinical, laboratory and instrumental data as well as in the life quality parameters.

Conclusion. "Hepaguard Active" contributes to the positive dynamics of the NAFLD symptoms, improves liver condition, normalises clinical and laboratory indicators, contributes to the reduction of excess weight, removes microbial imbalance in the large intestine associated with obesity and systematic metabolic disorders and, finally, improves the quality of life of patients.

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## ANTIPHOSPHOLIPID ANTIBODIES AND ANTIPHOSPHOLIPID SYNDROME

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Background. Antiphospholipid antibodies (aPL) are included in diagnostic criteria of antiphospholipid syndrome (APS) as good as systemic lupus erythematosus (SLE). There are a few cases of SLE onset in patients with isolated APS and vice versa development of APS in lupus patients in several years.

Objectives: to analyze the mutual clinical and serologic features of APS and SLE, to determine the number of patients going on to develop other autoimmune disease after long-term follow-up and to define risk factors of «transformation» from APS to SLE or lupus onset in APS patients.

Materials: The study group was composed of 131 patients (83 SLE and 48 primary» APS (PAPS)) with a mean age 36.4 + 12 years and mean follow-up 7 + 3 years (from 3 to 11). Patients had admitted to the department of systemic connective tissue diseases of Nasonova Scientific Research Institute of Rheumatology (Moscow, Russia) between June 2004 and September 2012. Thromboses were registered in all patients with PAPS and in 1 (1%) patient with SLE (without aPL). Immunologic disorders included high and mild positive anticardiolipin antibodies (in 10% SLE and 100% PAPS), anti-beta-2-glicoprotein-1 antibodies (in <1% SLE and 32% PAPS), anti-DNA-antibodies (in 100% SLE and <1%PAPS) and lupus anticoagulant (only in 29% PAPS). We used the chi-square and Fisher's exact tests to compare categorical variables and binary logistic regression to analyze possible factors.

Results: The main mutual manifestations were livedo reticularis (in 12% SLE

and 64% PAPS) and sick headache (in 14% SLE and 35% PAPS). The other mutual features were seen with the next prevalence: hemolytic Coomb`s positive anemia (in 24% SLE and 12% PAPS), thrombocytopenia (in 11% SLE and 19% PAPS), heart valve disease (in 9% SLE and 43% PAPS), recurrent fetal losses (in 8% SLE and 38% PAPS), Raynaud's phenomenon (in 38% SLE and 7% PAPS), cutaneous ulcers (in 3% SLE and 22% PAPS), avascular bone necroses (in 25% SLE and <1% PAPS). 36/83 (43%) patients with SLE had glomerulonephritis. And just 1/48 (<1%) patient with PAPS demonstrated persistent proteinuria. Kidney biopsy indicated APS-nephropathy: focal segmental glomerulosclerosis with thrombotic microangiopathy. Thromboses, fetal losses, livedo reticularis, heart valve disease and headache were associated with APS ($p<0.05$ in all cases). During the follow-up 11/48 (23%) PAPS patients developed SLE and 2/48 (<1%) - cutaneous vasculitis; 6/83 (<1%) SLE patients developed «secondary» APS, 1 patient developed rupus and in 1 patient diagnosis «SLE» was changed to scleroderma. The results of univariate logistic regression analysis showed high positive aPL (OR 5,84; 95% Cl 3,18-10,98; $p<0,001$) and livedo reticularis (OR 3,07; 95% Cl 1,62-5,79; $p=0,0003$) as independent risk factors for development of «secondary» APS in lupus patients and recurrent fetal losses (OR 1,27; 95% Cl 1,05-1,55; $p=0,009$) as possible factors related to the joining of SLE to APS.

Conclusion: SLE and APS have several mutual manifestations and can run into each other. Positive aPL and livedo reticularis are risk factors for development of «secondary» APS in lupus patients. Recurrent fetal losses can be possible factors related to the joining of SLE to APS.

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## PRIORITIES FOR THE TREATMENT OF PATIENTS WITH HYPERTENSION

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Arterial hypertension (AH) - one of the most common cardiovascular diseases, is a risk factor number one in the structure of total mortality in the world. The number of people suffering from hypertension in the adult population is about 1 billion people in the world. Arterial hypertension is the cause of 54% of strokes and 47% of coronary heart disease in the world. The risk of death from cardiovascular disease doubles with every increase in blood pressure 20/10 mm Hg Art. In Kazakhstan, on the background of a significant reduction in mortality from cardiovascular diseases in recent years there has been constant growth in overall morbidity and newly diagnosed hypertension. Level

of arterial pressure is a risk factor, which significantly reduces the elimination of danger of development of cardiovascular disease and death.

Diagnostic of raised arterial pressure is simple enough, the treatment is well known drugs- abound. However, advances in the treatment of these very common pathologies, major cause of formidable cardiovascular diseases: coronary heart disease, myocardial infarction, stroke, are very modest.

Objective: To study the daily profile of arterial pressure to evaluate the clinical efficiency of a preparation losartan in patients with hypertension.

Materials and methods. The study included 63 patients with hypertension II – III degree (13 men and 50 women), mean age - 48,3 ± 5,1years. Disease duration of hypertension amounted from 7 to 11 years. Prior to inclusion in the study, 23 patients were receiving various antihypertensive therapy in the form of combination therapy, with all patients at the time of screening blood pressure was higher than the "target level" and therefore the effect of the previously conducted therapy was regarded as inadequate, the remaining patients did not receive a regular treatment.

On admission, patients had complaints of headaches (64.5%), dizziness (18.6%), and pain in the heart (39.3%), palpitations (21.8%), and increased blood pressure (89.2%). In all patients, diurnal blood pressure profile was studied. In patients with complaints of marked fluctuations in blood pressure, dizziness and fainting in history, no signs of organ damage BP monitoring was performed. The effect was considered good when the target blood pressure was achieved in the absence of blood pressure lowering, or when it falls below 10%.

Results. In patients was often observed violation of circadian rhythm, which required the identification and correction, since it could cause cardiovascular complications. Insufficient lowering of blood pressure at night was found in 48% of patients. Excessive reduction of blood pressure during the night hours was observed in 19% of patients.

The study found that in a month from the start of the treatment with losartan 50 mg with the decrease of systolic 180,5 ± 1,5mm Hg to 159,8 ± 1,3mm Hg; DBP with 115,2 ± 1,2mm Hg to 99,5 ± 1,4 mm Hg; 2 months SBP decreased to135,4 ± 1,5mm Hg; DBP to 85,5 ± 1,3mm Hg($p < 0.05$). In a study of the dosage regimen of 50 mg losartan reduced the constant blood pressure 43/29 mm Hg. Art. After 3 months, there was a significant decrease in the thickness of the interventricular septum in systole (from1,84 ± 0,1to1,41 ± 0,1$p < 0.05$).

Conclusion. At inspection and treating patients with hypertension to improve their quality of life and prognosis can only be successful with individual approach to testing and treatment. The use of losartan lowers the target levels of blood pressure, provides improvement in the patients, a decrease in myocardial hypertrophy, improves tracardiac hemodynamics.

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# EFFICIENCY ESTIMATION OF INTRAPLEURAL AND THORACIC PARAVERTEBRAL BLOCK IN COMBINATION WITH GENERAL ANESTHESIA AT THORACOSCOPIC INTERVENTIONS AFTER THORACIC INJURY

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Intoduction. Chest injuries and traumas have recently become one of the most frequent causes for emergency admissions to hospital.

Methods. 90 patients urgently admitted to RRCEM with chest traumatic injuries have been examined. They were divided into 2 groups depending on applied method of anesthesia. In the first (control) group, (47 patient, 38,5±2,4 years) IPA has been done before the induction into anesthesia into the second intercostal space from the damaged side with bupivacaine in the dose of 75-100 mg. Analgetic component has been maintained by the above mentioned IPA and phentanil bolus dosing. In the second group (43 patients, 36,8±5,4 years) one-sided TPVB has been maintained before the induction at ThIV, ThVII levels 0,5% -5 ml (25 mg) bupivacain dosing (at the average totally 75-100mg) with the posterior paravertebtal space catheterization. Analgetic component has been maintained by PV analgesia and phentanil bolus dosing.

Results. The differences in hemodynamics indexes appeared at the traumatic moment of operation. In the group with use of IPA the medium hypertension with ABP raised by 25,5%, higher rate of HR by 26,1%, GPVR by 22% were observed and it was followed by the decrease of SV by 24,6% and EF by 13% compared with the 2nd group. While conducting anesthesia in the 1st group, hyperdinamic reactions of the systemic hemodynamics at the separate traumatic levels of operation were followed by inbalance of hemodynamic rhythms indicating on insufficient prevention from surgical aggression. In the 2nd group as the results of the development of segmental sympathetic block the indexes of ABP, HR and GPVR were not higher than normal ones.

Conclusion. Both method of the regional anesthesia reduce a pain syndrome sufficiently and safely in patients with chest injuries before an operative intervention. Introduction of the component TPVB into anesthesia scheme at thoracoscopic operative interventions allows to provide additional antinociceptive protection both in intraoperative period with minimal stress of central and peripheral parameters and facilitates the reduction of narcotic analgesic due to significant analgetic efficiency and neuro-vegetative protection.

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## INTEGRATED USE OF IVUS AND FFR IN PATIENTS WITH MULTIVESSEL CORONARY DISEASE

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Aim: to estimate the role and efficiency of integrated use of FFR and IVUS in treatment of multivessel coronary disease.

Methods: Patients with multivessel coronary disease were selected in the study and randomized into two groups by envelopes. In the first group patients underwent PCI after FFR measurement and using of IVUS in patients with angiographically intermediate coronary stenosis; in the second group – only by angiographic data (stenosis≥50%) and positive stress testing. Inclusion criteria: FFR value ≤ 0,80, minimal lumen cross sectional area (MLA)<4 mm² by IVUS, positive stress testing and consent of the patient. 82 patients were included in the study: in the first group – 38 persons and in the second – 44. In the first group control IVUS carried out all patients. The criterion for optimal stent was value of MLA≥6,5-7,5 mm². Immediate and long-term results were estimated by rate of MACE (death, myocardial infarction, repeat revascularization), acute and subacute stent thrombosis. Long-term results were evaluated after 12 months.

Results: In the first group 45 lesions from 49 stenosis undergoing primary examination were stented. And in the second group 55 lesions were stented. 142 drug eluting stents were implanted as a whole wherein the average number of stents per patient was 1,42+ 0,12 and 1.53+0,03 (p>0,05). In the first group 11 patients had signs of suboptimal stent implantation according to IVUS but satisfactory angiographic data showed that it needed additional dilatation of balloon catheters with high pressure. Survival of patients was 100%. The rate of MACE was 0% versus 9,09% in the first and the second groups respectively (p<0,001), and repeat revascularization over non-fatal myocardial infarction were performed in 4,5% patients (p<0,001). In the long term period 2 patients from the second group underwent repeat PCI due to progressive angina; in the first group MACE were not registered (p<0,001).

Conclusion: complex use of FFR- and IVUS-guided PCI strategy for intermediate coronary artery disease in patients with multivessel coronary disease allows to avoid unnecessary coronary intervention by determining the functional significance of lesions; increase the safety of endovascular treatment, due to the correct selection of stents and optimal stent implantation by IVUS; reduce the incidence of adverse cardiac events; that, in general, improves the quality of life in patients with coronary artery disease.

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# CIRCULATORY DISTURBANCES IN THE SPINAL CORD OF ADULTS (INNOVATIONS IN SPINAL ANGIONEUROLOGY)

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Objective. To analyse features of anatomy and hemodynamics of spinal circulation (arterial and venous systems), pathogenesis of its disturbances and clinical picture. Develop classification principles and diagnostic algorithm for radiculomyeloischemia of cervical, thoracic and lumbosacral spinal cord segments, differential diagnosis criteria of vascular and demyelinating diseases of the spinal cord. Develop therapeutic strategy and tactics in the treatment of acute and chronic radiculomyeloischemia. Determine therapeutic effectiveness of some vasoactive and neurocytoprotective drugs (mostly arterial or venous spinal cord blood flow). To clarify the role and possibilities of biomarkers evaluation in terms of spinal cord ischemia.

Material and methods. A large series of architectonics studies on arterial and venous systems of the spinal cord was conducted. They were conducted at all levels using a latex mixture injected into the blood vessels and subsequent photographing. An experimental model of arterial and venous ischemia of thoracolumbosacral spinal segments was created. Ischemia was caused by ligation or compression of abdominal aorta and its branches (simulation of aorta and paraaortic area surgery) as well as compression of dural sac at the lower lumbar segments caused by balloon catheter during the experiment with cats (herniated disc simulation). Simultaneous blood filling at different levels of the spinal cord (cervical, lumbar enlargement and thoracic segments) in the presence of administration of vasoactive drugs (aminophylline, dibazol, nicotinic acid, etc.) was investigated using the original method of myelography.

A detailed study of the neurological status of patients with circulatory disturbances in the spinal cord was conducted. More than 1,000 patients participated in this study. Clinical picture features related to myeloischemia of various segments of the spinal cord were assessed. Natural model for clinical research of myeloischemia of the bottom half of the spinal cord was identified. This model also referred to myeloischemia course in response to neurosurgical removal of low lumbar discal herniation and use of some vasoactive drugs increasing arterial blood flow or improving venous outflow from the thoracolumbosacral spinal segments. Role and possibilities of contrast myelography (mayodil and pneumomyelography), spinal selective arteriography and MRI of spine and spinal cord in radiculomyeloischemia diagnostics were assessed.

Results. Study of anatomy and physiology of spinal cord vascular system allowed to review “classic” idea that the spinal cord was supplied by “anterior spinal artery” with a direct rostral-caudal bloodstream originating from intracranial vertebral artery branches (its anterior spinal branches) and moving in caudal direction along the spinal cord. Our

experimental and clinical pathomorphological studies show that the anterior spinal artery is not a separate vessel. It is an anastomotic tract like cerebral arterial circle of the brain, exerted along the spinal cord. Blood pumps through several major radiculomedullary arteries (the most important are the artery of Adamkiewicz for lumbar enlargement and the artery of the cervical enlargement) which form the anterior spinal anastomotic tract. Directions of arterial blood flow at different segments of the spinal cord are contralateral. Magistral and loose types of blood flow to the spinal cord were shown for the first time (similar to the structure of the arterial, venous and nervous systems in the human limbs according to the definition of anatomist V.N. Shevkunenko). Pathogenic blood flow compensation syndrome in the cerebrospinal hemodynamic was identified for the first time (analogue of "steal" syndrome in the brain). Biphasic effect of vasoactive drug aminophylline on the spinal hemodynamics was demonstrated for the first time. Variants of myeloischemia clinical picture were studied for the first time. Their classification, based on ischemia territory in the context of spinal cord breadth and length, was proposed (transversal myeloischemia of the ventral half of the breadth (Preobrazhenskiy syndrome), transversal myeloischemia of the dorsal third of the breadth (Williamson syndrome), transversal myeloischemia of one-half of the spinal cord breadth (ischemic Brown-Sequard's syndrome), centromedullar ischemia (syringomyeloischemia), antero-cornual poliomieloishemiya (ALS syndrome) Stanilovskskiy - Tanon syndrome etc.). The classification also based on angio topical principle (anterior spinal artery and sulcal-commissural artery district, posterior spinal artery district and vasocorona district). Congestive radicular veins of cauda equina in case of diskal hernia were examined using MRI of the spine for the first time. This allowed to monitor the effectiveness of venotonic drugs such as L-lysine aescinat. Chronization of spondylogenic back pain as a result of reduced endorphin levels in spinal fluid was explained for the first time. Also therapeutic efficacy of Cortexin polypeptide improving the production of endorphins in the brain stem was shown.

Conclusion. A new chapter in neuropathology, referred to peripheral vascular diseases of the spinal cord and its roots, was created.

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## ABOUT TREATMENT OF SEVERE ASPHYXIATION AT BIRTH USING A CONTROLLED MODERATE HYPOTHERMIA OF THE BRAIN

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Objective. To examine clinical picture features (neurological status) of severe asphyxiation of premature newborns, research outcomes and improve accuracy of prediction in case of severe hypoxic-ischemic encephalopathy (SHIE) of mature

newborns when using a controlled moderate hypothermia of the brain.

Material and methods. 50 mature newborns with severe asphyxiation at birth (Apgar score was 5 and less at 5 minutes) were examined. Amplitude-integrated electroencephalography (aEEG) was used. 2 groups were formed: First one was the main group and consisted of 40 newborns. They received total body hypothermia (12 patients) and craniocerebral hypothermia (28 patients). Second group consisted of 10 newborns. They didn't receive hypothermia. This second group consisted of patients from intensive care unit. Their conditions were critical and similar to the patients from the first group. But according to aEEG, electrophysiological activity of the brain of these newborns was not depressed. This was an exclusion criteria for hypothermia. In the first 72 hours after birth biomarkers of brain damage were determined and evaluated for all mature newborns with severe hypoxic-ischemic encephalopathy (SHIE). Dynamics of indicators of repeated neuroimaging studies (MRI, CT and neurosonography) was controlled for mature newborns with severe hypoxic-ischemic encephalopathy during treatment using controlled moderate hypothermia.

Results. Controlled moderate hypothermia performed in the first 72 hours for patients with SHIE reduces mortality during the neonatal period up to 5% in comparison with the literature data (25-40%). Severe hypoxic-ischemic encephalopathy of newborns is more common (P=0.002) among primipara. There is no significant correlation between the characteristics of pregnancy or labour and the severity of HIE outcomes by the end of the first month of life. There is no significant correlation between patterns of background activity at aEEG, performed at admission (before controlled moderate hypothermia), and neurological status of the child by the end of the first month (p=0.06). Significant predictor of severity of HIE clinical outcomes by the end of the first month of life is the data of background activity patterns at aEEG, performed in 1 day and in 3-5 days of life ($p < 0.0001$, p=0.008). All infants suffered from asphyxiation at birth had increased levels of blood neuromarkers (NMDA receptor antiself antibodies, GluR1 receptors antiself antibodies and Protein S100 antiself antibodies). Significant correlation with the clinical severity of HIE revealed only for NMDA receptor antiself antibodies (p=0.0001). Ischemia of basal ganglia ("Status marmoratus"), detected using neurosonography in the first 5 days of child's life, is the most sensitive marker of poor clinical prognosis by the end of the first month of life (p=0.03).

Conclusions. Controlled moderate hypothermia has cerebroprotective effect for patients with SHIE which is confirmed by development of small amount (20%) of gross structural brain changes, registered by the end of the first month of life, in comparison with the literature data (80% of survived patients). While performing a controlled hypothermia there were no reported serious adverse events.

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# EVALUATING THE EFFECTIVENESS OF THE MODERN ANTI-SHOCK THERAPY OF SEVERE ACUTE ACETIC ACID POISONING

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Critical states in acute poisoning are alwaysaccompanied by severe disorders of hemodynamics and microcirculation disturbance. This is especially true for patients with severe acute acid poisoning, when extensive chemical burns of the gastrointestinal tract, a high level of hemolysis leads to a sharp increase of vascular permeability, development of hypovolemic shock and disseminated intravascular coagulation.

The purpose of the study. To evaluate the effectiveness of the developed tactics of intensive therapy of the acute acetic acid poisoning complicated by exotoxic shock.

Material and methods. Results of the treatment of 70 patients with severe poisoning with acetic acid, which were treated at the intensive care unit toxicological REMARC in 2008-2014. Mean age was 26,7 ± 5,6 years, average hemolysis 14,8,1 ± 5,2 g / l. The study excluded patients with severe somatic pathology, moderate and severe alcoholization and chronic diseases. Patients were divided into 2 groups. The first group - 46 patients enrolled in 2011-2014, underwent the intensive therapy, developed by us, which improves microcirculation and volemic balance (6% hydroxyethyl starch solutions-volustime, resorbilone, 7.5% sodium chloride solution) from the admission within 3-5 days of high-dose corticosteroids (prednisone 300-420 mg per day), injections substrate antioxidant cytoflavin to 20.0 ml / day, endotelioprotektor L-lysine aescinat a maximum dose of 20.0 ml /day. The second group - 24 patients enrolled in 2008-2010 was treated with a conventional therapy.

All patients from the moment of the following studies underwent: the studied parameters of blood pressure, heart rate, determined by the index of cardiac output (QVm) by the formula QVm = (amplitude alone × heart rate at rest) / (normal amplitude × normal heart rate) - normally 0 7 - 1.5. Algovera shock index (SHI), central venous pressure, urine output level. Indicators examined at the admission, after 6 hours, 12 hours, 24 hours.

The results of the study. The initial condition of patients in both groups was critical, coupled with a high hemolysis and from the moment of the admission, the development of severe Ash noted. This is manifested by increased QVm to 2,3 ± 0,5, SHI to 1,4 ± 0,5, heart rate - 122 ± 12, negative CVP, diuresis decrease in the volume up to 18,3 ± 4,2 ml /h. Against the background of ongoing intensive care patients in the first group, already after 6 hours showed a decrease of QVm to 1,4 ± 0,4, SHI to 0,98 ± 0,3, the heart rate up to 90,2 ± 6,2. Against the backdrop of forced diuresis stimulation recovered to 84,5 ± 9,8 ml / h, CVP to 55,5 ± 10,5 mm water column. In patients of the second group QVm amounted to 2,0 ± 0,3, SHI - 1,1±0,2, heart rate - 110,3 ± 6,0, diuresis 35,2 ± 5,4 ml/h, CVP remained negative, indicating that the ongoing decompensated Ash.

In the dynamics of 12 and 24 hours in patients of the first group the performance QVm equaled 1,2 ± 0,1 and 1,05 ± 0,1, SHI - 0,8 ± 0,1-0,8 ± 0,1, heart rate - 86 ± 8-80 ± 7,0, diuresis to 86 ± 9,5-136,4 ± 12,6 ml / hour, CVP 65,6 ± 4,4 and 78,2 ± 9,6 mm respectively vod.st . The analysis of the affected group II showed that even after 24 hours, the level of QVm, SHI was 1.5-1.4 times higher, and heart rate, urine output, central venous pressure - 1,6-1,5-1,7 times, respectively lower than in group I patients.

Of the total number of patients in the first group, acute renal failure (ARF) occurred in 6 (13.04%), and death occurred in 5 (10.8%), while in group II acute renal failure in 14 (58.3 %) was developed and 11 patients died, representing 45.8% of the total respondents.

Conclusion. Supplementing the intensive therapy of acute acetic acid poisoning with the preparations improving microcirculation and correcting volemic disorders can significantly reduce the time of recovery from the shock and to prevent acute renal failure.

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## SYSTEMIC REACTIONS OF ENDOCRINE ORGANS AND LYMPHOCYTES EXPOSED TO HYPOXIA AND INFECTION

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The aim of this work is to study the pathological morphogenesis and structural changes of the hypophyseal portal system and peripheral blood lymphocytes during hypoxia and infection, as well as their combined effect on the body.

The objects of study were the pituitary, thyroid and adrenal glands, as well as peripheral blood lymphocytes of rats. Studies were conducted on white male rats («Rattus Norwegicus»), in a young pubescent age (10 months, body weight 180-200 gr.).

In the course of work histological, electron microscopic, immunohistochemical and morphometric methods were used. 140 samples of biomaterials from the rats “Rattus Norwegicus” were investigated.

Painful procedures were performed under ether anesthesia - intraperitoneal injection of sodium thiopental at a rate of 100 mg per kg animal body weight.

Our results are presented below.

During hypoxia and staphylococcal infections, as well as in terms of the combined impact of both factors in the adenohypophysis, thyroid and adrenal glands, as well as in peripheral blood lymphocytes have been identified and systematized basis of morphological effects of hypoxia and respiratory infections.

At the same time fundamentally new information data on the structural reorganization of cells and the extracellular matrix of the adenohypophysis, thyroid, cortex and medulla of the adrenal glands and peripheral blood lymphocytes were found in the given experimental conditions.

The obtained data has been used to describe the receptor activity of endocrine cells and peripheral blood lymphocytes when stimulated with staphylococcus and hypoxic conditions in a certain threshold of tolerance.

A new theoretical approach to noninfectious immunogenesis was developed according to the data collected from lymphocytes and mesenteric lymph nodes, as well as inter-system interactions during hypoxia.

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## INFLUENCE OF ENVIRONMENTAL FACTORS ON HUMAN HEALTH: PREGNANCY AND CHILDBIRTH, SOME INDICATORS OF PHYSICAL DEVELOPMENT OF NEWBORN

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A socio-hygienic study was carried out to examine possible adverse effects of a carriage of organochlorine pesticides (their content in breast milk) on pregnancy, birth and the physical development of infants. Methods: The survey involved 191 respondents - resident mothers from different villages and towns of Almaty region of Kazakhstan, from which samples of breast milk were collected to determine the content of organochlorine pesticides by gas-liquid chromatography.

Results: In the studied sample of mothers-respondents, their contact with pesticides was minimal: 1 case of occupational exposure, and 1 case of domestic use of pesticides. Respondents with occupational exposure to pesticides has been noted in case of birth of the newborn with low birth weight (1900 g), while in the sample frequency of low birth weight infants was 3.7%. Despite the small number of such events, Fisher's exact test value (0.01) indicates the non-random nature of the identified event. A further disturbing factor may be that mothers have the same history was marked in case of miscarriage in 2011. In total, the sample rate of miscarriages in history was 15.8% (the value of Fisher's exact test 0.16).

Performance analysis of the physical development of infants by sex showed that children's development is within the physiological norm. The analysis of the parameters of the physical development of infants depending on the order of birth showed some physiological pattern: the first-born infants had statistically significant lower weight and body size compared to the other. Moreover, among nulliparous rate of premature birth was slightly higher than in multiparous - 3.28% vs. 2.50%, but the difference was not statistically significant.

It was noted that an interesting pattern that differs from the published data - the ratio of newborn boys to girls in the sample was 1.135. Although it is known that the number

of newborn boys at birth prevails. Among nulliparous, usually when parents do not try to control the sex of the child, the ratio was even higher – 1.458 in favor of girls. And only among multiparous number of female births was slightly lower - 0.967.

In a small part of selected samples of breast milk were found traces of DDT and its metabolites. A clear link with the presence of pathology of pregnancy, labor and physical development of the child is not revealed.

Conclusion. The findings suggest that there are certain problems related to reproductive health in individuals occupationally exposed to pesticides.

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## EFFICIENCY AND QUALITY OF RURAL OUTPATIENT CLINIC IN KARASAI DISTRICT IN KAZAKHSTAN

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Introduction. Kazakhstan remains an agrarian country, the ratio of rural and urban population is 54.1 to 45.9%. According to the Kazakh Institute of Socioeconomic Information and Forecasting, the rural population in Kazakhstan is growing four times faster than the urban counter to the global trend. In recent years, medical, demographic and social problems, that are typical of our society, particularly sharply manifested in the countryside. The most urgent problems of health and health care of the rural population were expressed in a number of indicators.

The aim of this work was to evaluate the provision of rural population of Karasai district of Kazakhstan medical personnel and the efficiency and quality of activity of rural outpatient clinics.

Methods: 500 respondents were surveyed, 5 key persons were interviewed. Karasai district outpatient clinic's reporting documents for 2012 were assessed using performance indicators.

Results: Provision of studied population by medical staff corresponds to the Republican legislation. The assessment of reporting documents of Karasai district outpatient clinic for 2012 on performance indicators of the quality of medical services showed their high efficiency and good quality of their activities: coverage of pre-natal screening and contraception of women with absolute contraindications to carrying a pregnancy made above 94%; enrollment of patients with diabetes and provision of them by free medicines were full. The child mortality rate is reduced by 5%. Coverage of needed population by fluorographic examination made 70%.

According to opinion of rural respondents, the quality of medical services received at the outpatient clinic in the previous 12 months prior to the study was satisfactory. Less than half of respondents (46%) rated the quality of care received more as good,

16% - very good, and 7% - excellent. 13% of respondents assessed the quality of received health services rather bad, 8% rated as poor quality of medical services, and 4% - as very bad. This 5% of respondents could not answer the question and 1% did not receive any medical care.

Conclusion. Thus, medical care during the year received 39% of the respondents. The client's gender, self-evaluation of health, education, and financial status effect on the likelihood, that respondents will get medical services. Respondents rated the quality of medical services provided by the rural outpatient clinic rather well. Based on evaluation by performance indicators, the efficiency and quality of health services provided by the Karasai district outpatient clinic were high.

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## COMPARISON OF THE INOTROPIC EFFECTS OF 15 –HYDROXYAZOMETHINE ATISINE AND 15 -ACETOXYAZOMETHINE ATISINE - DERIVATIVES OF THE DITERPENOID ALKALOID ATISINE

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The inotropic effects of 15 –hydroxyazomethine atisine (15- HAA) and 15 -acetoxyazomethine atisine (15-AAA) - derivatives of the diterpenoid alkaloid atisine were investigated using rat left ventricular papillary muscle. These alkaloids possess significant antiarrhythmic effect which is more pronounced in the 15-AAA containing acetyl group at the position C-15 instead of hydroxyl group in the 15-HAA. It was found that such modification was not accompanied by the enhancement of the negative inotropic activity of 15-AAA, but rather decreased it and lead to the appearance of additional inotropic properties. The 15-HAA at all used concentration and stimulation frequencies produced larger negative inotropic effect than 15-AAA, whereas the 15-AAA at low concentration and at low stimulation frequencies also induced a moderate positive ionotropic effect. The negative inotropic effect of 15-AAA and 15-HAA significantly reduced after blockage or inactivation of $Na^+$-channels as well as after blockage of $Ca^{2+}$- channels. In addition, these alkaloids significantly decreased the post-rest potentiation of contraction. We conclude that the negative inotropic effects of 15-AAA and 15-HAA are mediated by their combined effects on L-type $Ca^{2+}$- and $Na^+$-channels, as well as, on $Na^+$/ $Ca^{2+}$- exchanger and sarcoplasmic reticulum (SR) function resulting in a decrease in the amount of $Ca^{2+}$ released from the SR. The difference in the negative inotropic activity of these alkaloids probably are related to their different potency to inhibit L-type $Ca^{2+}$- or $Na^+$-channels and to a superimposed positive inotropic effect of 15-AAA.

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# PREDICTING THE DEVELOPMENT OF COMPLICATIONS IN CHILDREN WITH ACUTE INTESTINAL OBSTRUCTION

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Nowadays, acute intestinal obstruction in children remains one of the most dangerous diseases, occupying the third place in emergency surgery of the abdominal cavity. Determination of the degree of the links of the immune system as well as the factors and mechanisms that lead to the development of local and systemic complications, is extremely important for proper management of patients in the early postoperative period. Measures to optimize tactics of treatment of surgical infections and postoperative complications in pediatric surgical practice are currently relevant and provide positive trend of the results of treatment.

Objective: the improvement of results of treatment of postoperative complications in children with acute intestinal obstruction.

Materials and methods: the study was conducted in 36 children aged 3 to 14 years admitted to the surgical Department of the CSTO Astrakhan with acute intestinal obstruction in the period from 2010 to 2014. The material for the study was taken before surgery, then into 1st, 3rd and 5th postoperative day. To determine serum concentrations of cytokines IL-2, IL-4, solid-phase immunoassay method using sets of reagents Protein contour" (St.-Petersburg) was applied. Another indicator, which defined the main group of patients, indicating to the development of endogenous intoxication in the postoperative period, were molecules average molecular weight (MSM-1).

The control group included 30 children admitted to the surgical Department for a planned operation. Significant deviations from control values were recorded throughout the observation period.

Results and discussion: the results of the study showed a different degree of activation markers of inflammation. From the first day of the postoperative period clearly increased signs of inflammation and endogenous intoxication, characterized by high values of pro - and anti-inflammatory cytokines. Compared with the control group a significant elevation in the 1st period, levels of pro-inflammatory IL-2 (466,5±46,9 pg/ml, $p<0,01$), anti-inflammatory IL-4 (27,3±4 pg/ml, $p<0,01$) was observed. The analysis of indicators of inflammatory mediators in the postoperative period showed a maximum increase of pro - and anti-inflammatory interleukins on the 3rd day after surgery. Later on the 5th day of the postoperative period there was a decrease in the level of pro-inflammatory mediators IL-2 (237,3±13,5 pg/ml, $p<0,05$), while maintaining a high level of anti-inflammatory cytokine IL-4 (26,6±4 pg/ml, $p<0,01$). It was noted the increase in the content of MSM-1 on the 3rd day, which amounted to an average of 0,38±0,04 conv. units ($p\leq0,001$). On the 5th day the level of the MSM-1 in the serum of patients decreased to 0,33 ±0,04 conv. units ($p\leq0,05$).

Conclusions: determination of the levels of markers of endogenous intoxication is an important determining factor in predicting the development of complications of the postoperative period that allows you to control the inflammatory process in acute intestinal obstruction in children.

European Academy of Natural Sciences (Hanover)
European Scientific Society (Hanover)
Russian Academy of Natural Sciences, Moscow

# International Forum "Euro-ECO - Hanover 2015": Environmental and Engineering Aspects for Sustainable Living

1 - *2 December 2015*
*ANDOR Hotel Plaza, Hanover, Germany*

Objective: consolidation of efforts of state and non-governmental organizations of European countries in order to preserve natural resources, to share the international experience and to set up a module of joint work in the sphere of environmental policy under the conditions of the modern industrial society.

Closely connected economic and legal aspects will be also discussed. Special attention is to be paid to developing environmental mentality in students alongside with drawing educational environmental programs for the countries of Eastern Europe.

Scientists, experts and specialists in environment, ecology and economics, law and public health, as well as representatives of politics and business are cordially welcome to attend.

Deadlines:
Deadline for submission of abstracts: October 15, 2015
On-line Submission: info@eu-eco.eu

Application Deadline (specifying a form of participation: abstract, oral presentation, poster, no presentation etc): October 15, 2015.

The best accomplishments in the field of ecology and their authors are to be rewarded with diplomas and medals of the European Academy of Natural Sciences.

Venue: ANDOR Hotel Plaza located in Hanover downtown, 100 m from the Railway Station.

Languages: German, English, Russian: simultaneous translation

*During the Forum a number of professional excursions and a tour of Hanover as well and social events and will be offered.*

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