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A DIAGNOSTIC VALUE OF INVESTIGATION OF IL-1 β , IL-4, IL-6, IF- γ , TNF- α AND IL-1Ra CONTENT IN THE BLOOD SERUM IN REACTIVE ARTHRITIS PATIENTS OF DIFFERENT ETIOLOGY*O.V. Zaliavska*

Abstract. The aim of research. To study levels of IL-1 β , IL-4, IL-6, IF- γ , TNF- α and IL-1Ra in the blood serum in reactive arthritis patients of different etiology and their effects on the activity and clinical course of the disease. **Methods.** 38 patients with reactive arthritis (ReA) have been examined against a background of chronic pyelonephritis (CP) in the exacerbation phase of urogenital infection (group 1). 12 ReA patients with earlier enterocolitis (group 2) and ReA of unknown etiology (11 people – group 3) were also examined. IL-1 β , IL-4, IL-6, IF- γ , TNF- α and IL-1Ra content in the blood serum was determined in patients under study by solid-phase enzyme immunoassay method of using monoclonal antibodies (“Diaclone” reagents set, France). **Results.** An increase of IL-1 β , IF- γ and TNF- α levels as well as diminution of IL-6 and IL-1Ra blood count indices in comparison with healthy patients that denotes the implication of a cytokine, imbalance in ReA progression has been revealed in patients under study when investigating cytokine status. The direct correlative dependence relation of IL-4, IL-6 and TNF- α blood cytokine count upon ReA activity degree and reverse correlative dependence of medium strength according to IF- γ blood count has been defined. Group 1 patients had the highest IL-6 and IF- γ blood count according to the indexes of other groups, as well as the maximum expression suppression of anti-inflammatory IL-4 and IL-1Ra activity. **Conclusion.** The usage of the enzyme immunoassay diagnostic test-systems allows to get the information about functional activity of different types of immunocompetent cells; about the complexity of the inflammatory process, its migration from the local to systemic level, and it is one of the most prospective methods of evaluating immune system condition in the clinical experience in order to control the inflammation activity and prognosis.

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STATE OF MICROBIOCENOSIS OF THE COLON CAVITY CONTENTS IN PATIENTS WITH ACNE VULGARIS – THE RESIDENTS OF CHERNIVTSI REGION (IODINE DEFICIENCY REGION)*Yu.P. Karvatska*

Abstract. In young people (18 - 25 years old) with acne vulgaris the disease is associated with the formation of dysbacteriosis / colon dysbiosis of I-IV degree. The latter one depends on the severity of the clinical manifestations of the main disease. **Aim.** The aim of the study was to determine the colon microbiocenosis state of patients with different clinical forms of acne vulgaris – the residents of Chernivtsi region (iodine deficiency region). **Material and methods.** The determination of the qualitative and quantitative microbiota contents of the colon was carried out in 62 patients with acne vulgaris aged 18 to 25 years – the residents of Chernivtsi region (iodine deficiency region) using bacteriological method. Patients suffered from mild form (21 persons – 33,9%), moderate severe form – 23 persons (37,1%) and severe form of dermatoses – 18 persons (29,0%). **Results.** Dysbacteriosis / Dysbiosis of I-IV stages of severity without active clinical manifestations were found in the majority (60 persons – 96,8%) of the patients with acne vulgaris. The intestinal eubiosis or dysbiosis of I or II degrees were diagnosed in the majority (95,0%) of patients with mild form of dermatosis and only in 5,0% of the patients of III degree. Dysbiosis of I and II degrees was found in 56,5% of the patients with moderate stage of acne severity, dysbiosis of III and IV degrees – in the rest of the patients (43,5%). Dysbiosis of III and IV degrees was found in the majority of the patients (84,2%) with severe manifestations of acne and dysbiosis of II degree – only in 15,8% of persons. **Conclusion.** Changes of the qualitative and quantitative composition of microbiota contents of colon cavity were found in the majority (96,8%) of the patients with acne vulgaris – the residents of Chernivtsi region (iodine deficiency region), indicating the presence of dysbiosis with mainly subclinical or latent course in patients with varying severity, the change degree of microbiocenosis is interdependent on the severity of the clinical manifestations of dermatosis.

Keywords: acne, iodine deficiency region, the colon cavity microbiocenosis.

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CYTOKINE-MEDIATED MECHANISMS OF INFLAMMATION DEVELOPMENT IN ACUTE CHOLECYSTITIS

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Objective. Determine the concentration of TNF- α , its soluble receptor, TNF-R55 and TGF- β 1 in patients with acute cholecystitis before surgery. **Methods.** Immunological studies were carried out in 21 patients with acute calculous cholecystitis aged 45-85 years. The control group consisted of 15 practically healthy persons aged 35-55 years. The diagnosis of acute cholecystitis was made on the basis of integrated clinical, laboratory and instrumental examination. Blood sampling for the study was performed before surgery. A study of blood levels of cytokines, such as: TNF- α by company's reactive "VektorBest" (Russia), TNF-R55 – company's reactive «BioSource» (Belgium), TGF- β 1 – company's reactive «DRG» (Germany) was carried out. The data were processed by the program «STATISTIKA.-6.0». The arithmetic average meaning (M) and standard deviation (m) were calculated. Probability of data differences meaning was determined using Student's t test. Indicators were considered probably at $p < 0.05$. **Results.** In patients with acute calculous cholecystitis TNF- α level of was $7,72 \pm 0,83$ pg/ml, which is 3 times probably ($p < 0.001$) higher its concentrations compared with control group $2,5 \pm 0,18$ pg/ml. The average level of TNF-R55 was $5,06 \pm 0,72$ ng/ml in comparison with the control group, where the level of TNF-R55 was $1,20 \pm 0,60$ ng/ml probably 4,2 times higher ($p < 0.05$). In patients with acute cholecystitis concentration of TGF- β 1 in serum was $15,4 \pm 0,3$ ng/ml., and in the control group it was - $17,9 \pm 0,71$ ng/ml. Serum level of TFR- β 1 in patients was lower than in the control group, 1,16 times. **The conclusion.** Changes in the system of pro-and anti-inflammatory cytokines revealed by us in acute cholecystitis indicates the fact of cytokine balance, which is a favorable prognostic sign.

Key words: acute cholecystitis, cytokines TNF- α , TNF-R55, TGF- β 1, inflammation.

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SODIUM HOMEOSTASIS CHANGES IN CASE OF SEVERE TRAUMATIC BRAIN INJURY UNDER CONDITIONS OF INFUSION OF OSMOTIC DIURETICS

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Abstract. Traumatic brain injury (TBI) is always and invariably accompanied by mechanisms of self-regulation of metabolic processes. Severe head injury is always accompanied by elevating intracranial pressure (ICP), which leads to the development of edema, and swelling of the brain, which in its turn becomes one of the causes of mortality due to this injury (4). **Aim of research.** To correct elevated ICP in patients with severe traumatic brain injury in acute period using osmotic diuretics such as mannitol, and recently - sorbilactum (2,3,5,6,7). **Materials and methods.** These drugs have anti-edema effect by reducing brain swelling and also causing increased urine output. As a result this dehydration can occur with a change in the electrolyte composition of blood (6,7,9). Water and electrolyte disturbances make the therapy of patients with severe TBI a difficult task. Mostly changes are in sodium balance. According to some authors, hypernatremia is combined with the adverse effects, and is regarded as a marker of disease severity, and sometimes as an independent predictor of mortality (1,3,14,16). In marked cerebral edema dehydration therapy should be prescribed with osmotic diuretics that can lead to a negative water balance, which in its turn promotes the change of electrolyte homeostasis, especially sodium, and disease. Adequate infusion therapy is an integral part of the concept of brain protection in severe TBI (6,9). The purpose of investigation was to observe changes in water and sodium homeostasis in patients with traumatic brain injury using different osmotic diuretics. Patients with severe traumatic brain injury were investigated. All patients were divided into two groups - a control group which mannitol was injected to, and investigated one who were injected sorbilactum and rheosorbilactum. Water balance in patients was calculated as the difference between the amount of entered infusion and diuresis per day. In patients with severe TBI should try to stick zero water balance. Sodium level was determined by photometry (normal $130,5-156,6$ mmol / l). **Conclusions.** The largest number of patients with a negative water balance was observed on the 1st day with mannitol infusion, but it had a constant tendency to decrease. The largest number of patients with a positive water balance was observed in the 2-day infusion at Sorbilactum. All fluctuations of sodium ions in the blood serum of patients with traumatic brain injury do not go beyond the norm. Mannitol infusion often leads to negative water balance in patients with severe TBI than sorbilactum infusion, especially in the first days of application. Infusion of osmotic diuretics in recommended doses in patients with severe head injury in the acute period does not cause significant changes in the level of sodium ions.

Key words: traumatic brain injury, osmotic diuretics, water balance, sodium concentration in the blood serum.

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SAFETY OF USING ANTIHYPERTENSIVE DRUGS IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND CONCOMITANT HYPERTENSION

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Abstract. The aim of the study. To evaluate the safety of various schemes of antihypertensive drugs in patients with combined chronic obstructive pulmonary disease and essential hypertension. **Materials and methods.** The study included three groups of patients: one group received a combination of an ACE inhibitor ramipril and selective beta-blocker nebivolol, group 2 - received the combination of ramipril and a diuretic (hydrochlorothiazide), group 3 - the combination of ramipril and the calcium antagonist (amlodipine). The groups were randomized by age, sex and severity of airflow obstruction. The degree of dyspnea was measured on MCR scale (Medical Research Council scale). Set of the type and degree of ventilatory failure was determined to komp'ternomu Spirograph «Master Scope PC» (Erich Jaeger, Germany). **Results.** In the group under study it was noted the appearance of cough in 3.65% of cases, these patients were excluded from further analysis. In the group of patients who received the combination of ramipril and nebivolol there was a decrease of lung function by 1.2% at initiation of therapy, without clinical signs of obstruction. The positive dynamics of lung function reduce the dyspnea degree in patients that received the combination of ramipril and amlodipine and ramipril and hydrochlorothiazide. **Conclusion.** 1. All schemes of antihypertensive therapy used by us were safe. 2. The use of highly selective beta-blockers (nebivolol) contributes to worsening bronchial obstruction, but not reliably and without subjective symptoms. 3. Treatment of hypertension in patients with chronic obstructive pulmonary disease requires constant monitoring of the patients.

Keywords: chronic obstructive pulmonary disease, essential hypertension.

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EXPERIMENTAL STUDY OF COLON PRE-EPITHELIAL MUCOUS LAYER MICROFLORA IN ALBINO RATS WITH INDUCED DIABETES MELLITUS

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Abstract. The aim of research. This experimental issue deals with microbiological investigation of quantitative and qualitative composition of microflora of pre-epithelium mucous layer of colon in albino rats with aloxan-induced diabetes mellitus. **Methods.** Case-control experimental study conducted on white 20 albino rats with weight from 200 to 220 g: 10 intact animals (control group) and 10 rats in basic group with aloxan-stimulated diabetes mellitus. The pieces of colon served as research material for microbiological investigation with obtaining pure cultures of microorganisms. Population level of microflora of pre-epithelium mucous layer of colon was displayed in logarithm of colony-forming units (lg CFU/g). Statistical analysis was performed by Student's t-test. **Results.** Aloxan-induced diabetes mellitus in experimental animals leads to abnormalities of quantitative composition – the rising of constancy index (CI) of species that related to additional and residual microbiota: *E.coli* Hly⁺ was isolated with CI 30%, *Clostridium* – 70%, and *Staphylococcus*, *Proteus*, *Peptococcus* – 40%. Qualitative abnormalities include decrease of *Bifidobacteria* populational level – 5.60 ± 0.29 vs 6.65 ± 0.27 lgCFU/g ($p < 0.05$), *Bacteroides* – 2.21 ± 0.15 vs 6.50 ± 0.18 lgCFU/g ($p < 0.001$), *E.coli* – 2.25 ± 0.16 vs 5.77 ± 0.19 lgCFU/g ($p < 0.001$) and *Enterococcus* 2.08 ± 0.07 vs 6.17 ± 0.22 lgCFU/g ($p < 0.01$). Meanwhile *Peptostreptococcus* populational level had moderate increase to 4.13 ± 0.19 vs 3.22 ± 0.19 lgCFU/g ($p < 0.05$). **Conclusions.** In basic group the pre-epithelial mucous layer of colon was contaminated with opportunistic pathogenic *Peptococcus*, *Clostridium*, *Proteus*, *Staphylococcus*. Autochthonous obligatory *Bifidobacteria*, *Lactobacilli*, *Bacteroides* remain dominant role, only *Eubacterium* was completely eliminated. It probably had great impact on the further weakness of colonization resistance of gut, accompanying diabetes in animal model.

Key words: aloxan-induced diabetes mellitus, colonization resistance, microflora.

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CHANGES IN PITUITARY-ADRENAL SYSTEM IN PATIENTS WITH ACUTE CORONARY SYNDROME, COMBINED WITH DIABETES MELLITUS TYPE 2

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Abstract. The aim of research was to investigate activity of hormones of pituitary-adrenal system in patients with acute coronary syndrome, combined with diabetes mellitus type 2 and to define the prognostic criteria of fatal outcome with ST-segment elevation of myocardial infarction in patients with diabetes mellitus type 2. **Materials and methods.** The study included 124 patients with acute coronary syndrome combined with diabetes mellitus type 2. Patients were divided into 3 groups: 1st group (68 persons) - with benign course of acute coronary syndrome, the 2nd group (45 persons) - with complicated course of acute coronary syndrome (including acute heart failure (Killip II, III), early postinfarction angina, paroxysmal tachycardia, atrial flutter and atrial fibrillation, I-III degree atrioventricular block), 3rd group (11 persons) - with fatal outcome after acute coronary syndrome (cardiogenic shock). It has been found that patients with complications and fatal outcome after acute coronary syndrome are characterized by reduced levels of dehydroepiandrosterone sulfate, index cortisol/growth hormone, elevated levels of cortisol and growth hormone, unlike persons without complications. The authors also found positive correlation between dehydroepiandrosterone sulfate and index cortisol/growth hormone ($r=0,421$, $p<0,05$), negative correlation between dehydroepiandrosterone sulfate and growth hormone ($r=-0,392$, $p<0,05$). Predictors of fatal outcome of ST-segment elevation of myocardial infarction in patients with diabetes mellitus type 2: index cortisol/growth hormone lower than 58,4 (odds ratio = 1,965, 95% confidence interval: 1,735-2,295, $p=0,004$) and level of dehydroepiandrosterone sulfate lower than 0,62 mg/ml (odds ratio = 1,325, 95% confidence interval: 1,168-1,583, $p=0,012$); model sensitivity of 78,4% and specificity of 80,7% were well defined. **Conclusion:** The importance of determining the level of hormones of pituitary-adrenal system, which has a large clinical value in predicting complications and fatal outcome after acute coronary in patients with diabetes mellitus type 2 has been substantiated in this study.

Key words: acute coronary syndrome, diabetes mellitus type 2, cortisol, dehydroepiandrosterone sulfate, growth hormone, prediction of risk complications.

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MORPHOLOGICAL PRECONDITIONS FOR CONGENITAL DEFECTS ORIGIN DURING THE BRAIN DEVELOPMENT

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Abstract. The aim of our study was to develop a classification of CGD of the brain based on the embryogenesis stages and to analyze prevalence of given anomalies in Chernivtsi region. **Material and methods.** Research of CGD frequency in the brain was carried out in Chernivtsi region on the basis of medico—genetic centre. A retrospective method by studying the registration genetic maps (f.№ 149 /a) for 2004-2008 was used. The group under study was formed on the population base. The annual statistical digests have been also used (2004-2008). Over the period of investigation pregnant women whose fetuses had CGD of CNS, namely anencephaly and hydrocephalus were determined in the districts of the region 72. The control group (230 people) consisted of pregnant women seeking care in the medico-genetic center during the period. **Discussion of the results.** Morphological preconditions for possible origin of congenital defects of the brain depending on the stages of embryogenesis have been established and their classification has been generalized. The pregnant women under study were divided by age as follows : up to 20 years – 38,9% , 20-35 years – 52,8% after 35 years — 8,3% that is defects of the CNS were detected more frequently in women aged 20-35, coinciding with the literature data. Hydrocephalus occurred 1,2 times more frequently in fetuses of women aged under 20 years (OR — 1,2, 95% CI 0,6-2,7), anencephaly 1,7 times — in women aged 20-34 years (OR — 1,7, 95% CI 0,8-3,7). Most frequently these anomalies were diagnosed during gestation up to 22 weeks of pregnancy (second trimester) and make up 58,3% (42 cases), and 16 weeks — 23,6% (17 observations, of which 14 — anencephaly) and 18,1% defects (13 cases) were diagnosed after 28 weeks. It is due to the timely diagnosis of CGD of the brain. By the 13th week of pregnancy anencephaly was diagnosed 5,2 times more frequently (OR — 5,2, 95% CI 2,0-13,2) hydrocephalus was diagnosed more frequently (OR — 1,1, 95% CI 0,5-2,5) to 22 weeks. In 73,6% of cases — it was the first pregnancy, in 26,4% — the second one. In the first pregnancy anencephaly occurred 1,8 times more often (OR — 1,8, 95% CI 0,8-4,1) and hydrocephalus — in 1,5 times (OR — 1,5, 95% CI 0,7-3,4). These pregnancies ended by abortion in the most cases, for medical reasons (63,9%), which indicates the timely elimination of the fetus with CGD of CNS. Anencephaly (OR — 1,1, 95% CI 0,5-2,5) and hydrocephalus (OR — 1,6, 95% CI 0,7-3,4) occurred more frequently in female fetuses. **Conclusions.** 1. Deranged neuroontogenetic process is a multifactorial pathology in the embryonic period of development in which there is some connection between the separate defect and age of the embryo. 2. Congenital defects of the brain are an outcome of one or more of the basic processes of brain development : formation of the neural tube , division of the cranial department into pair formations , migration and differentiation of neural cell elements . It fully applies to the forebrain and, to a lesser extent, to the brain stem. 3. Most frequently these anomalies were diagnosed in up to 22 weeks of pregnancy (second trimester) — in 58,3% of cases. By the 13th week of pregnancy anencephaly was diagnosed 5,2 times more often (OR — 5,2, 95% CI 2,0-13,2) hydrocephalus occurred more often (OR — 1,1, 95% CI 0,5-2,5) to 22 weeks. 4. Anencephaly (OR — 1,1, 95% CI 0,5-2,5) and hydrocephalus (OR — 1,6, 95% CI 0,7-3,4) occurred more frequently in female fetuses.

Key words: brain, congenital defects in the growth, fetus, morphogenesis, pregnant.

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