

## ABSTRACT&amp;REFERENCES

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## DETERMINATION OF THE POSSIBILITY OF DEVELOPMENT OF THREATENING CONDITION IN PATIENTS WITH DIABETIC KETOACIDOSIS

p. 4–9

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*The aim of the research was to create a mathematical model for determining a possibility of the threatening condition development in patients with diabetic ketoacidosis using methods of mathematical statistics.*

*Methods.* There were examined 43 patients with diabetes mellitus decompensation, who underwent intensive therapy by the offered method. Patients were divided in two groups depending on the presence of the threatening condition: group 1 – patients without hepato-intestinal dysfunction (12 persons); group 2 – patients with hepato-intestinal dysfunction (31 persons). All indicators were registered at admission to the department of intensive care at first, third and fifth day after the treatment. The method of logistic regression was used for constructing the mathematical model.

*Results.* There were revealed 5 most important indicators for determining the threatening condition, used as prognostic factors for estimating the complications probability. The model for assessing the data, used for ROC-analysis, was constructed.

*Conclusions.* The elaborated mathematical model of the possibility of the threatening condition development in patients with DKA allows to diagnose not only dangerous tendencies in real time, but also to use medical strategies for preventing and restoring hepato-intestinal and multiple organ dysfunction in these patients

*Keywords:* Diabetic ketoacidosis, intensive therapy, enteral oxygenation, hepato-intestinal dysfunction, logistic regression

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**CLINICAL SIGNIFICANCE OF RENAL FUNCTION WORSENING IN PATIENTS WITH ACUTE DECOMPENSATED HEART FAILURE, DEPENDING ON NGAL CHANGES AND INITIAL RENAL FUNCTION**

p. 9–15

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**Aim.** To determine the value of the renal function worsening (RFW) depending on NGAL and initial renal dysfunction in so-called “wet and warm” patients with acute decompensated heart failure (ADHF).

**Materials and methods.** The prospective study included 141 patients with ADHF 38–85 years old (mean age 66,4±2,2), successively admitted to cardiologic department of Olexandrivska clinical hospital in Kyiv during 2012–2014, 38 patients had RFW, 67 patients underwent the assessment of NGAL in blood serum using enzymatic immune analysis for D1 and last D.

**Results.** RFW by creatinine was in 38 (27 %) of patients and it was absent in 103 (73 %) of patients. RFW group with the increased NGAL content differed from patients without RFW by the more occurrence of hypertonic disease, diabetes mellitus, IHD and NYHA IV at admission (all  $p < 0,05$ ). At the analysis of patients with RFW depending on MDRD it was established, that patients with MDRD <60 and RFW were

essentially older than patients with MDRD in both groups with MDRD > 60 ( $p < 0,05-0,01$ ).

**Conclusions.** RFW in patients with ADHF is connected with the increased intensity of symptoms only at association with NGAL increase in 48 hours. Patients with RFW without NGAL increased didn't essentially differ from ones without RFW

**Keywords:** renal function worsening, acute decompensated heart failure, NGAL, decongestion

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### PROGNOSIS OF HIV-INFECTION PROGRESSION AND THE SEARCH FOR THE PREDICTORS OF AIDS AND PULMONARY TUBERCULOSIS DEVELOPMENT

p. 16–19

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*HIV-infection is the most urgent problem of health protection because of the high morbidity level, polymorphism of clinical manifestations, high risk of the unfavorable results development and significant economic losses, caused by the prevalence of persons of working age among infected people. But factors that favor the pulmonary tuberculosis development in HIV-infected patients remain unexplained and need separate studies.*

**Aim of the research** – to increase the prognostication of HIV-infection course based on determining predictors of progression to AIDS stage and pulmonary tuberculosis development.

**Materials and methods.** The retrospective cohort analysis of 1498 HIV-infected patients, among which 491 had IV clinical stage of HIV-infection during the observation period (2003–2015), was realized. The statistical analysis was realized using Cox regression.

**Results of the research.** At the analysis of predictors of HIV-infection progression to IV clinical stage the binary anal-

ysis revealed five important ones: male sex (HR=0,644, 95 % CI [0,518-0,800], p=0,000), patients' age (HR=1,016, 95 % CI [1,002-1,029], p=0,022), infection duration >3 years (HR=1,252, 95 % CI [1,200-1,306], p=0,000), initial level of CD4 lymphocytes less than 350 cells/mcl (HR=0,997, 95 % CI [0,996-0,998], p=0,000) and parenteral way of HIV transmission (HR=1,478, 95 % CI [1,090-2,004], p=0,012). The multiple analysis of Cox proportional intensities determined independent predictors of HIV-infection progression to IV clinical stage as: male sex (HR=0,627, p=0,000), infection duration >3 years (HR=1,222, p=0,000), parenteral way of HIV-infection transmission (HR=0,627, p=0,000), and primary level of CD4 lymphocytes < 350 cells/mcl (HR=0,997, p=0,000). The independent predictors of the pulmonary tuberculosis development in HIV-infected patients were determined as: male sex (HR=0,517, p=0,000), presence of VHC-co-infection (HR=0,433, p=0,000) and HIV-infection duration > 3 years (HR=1,177, p=0,000).

#### Conclusions:

1. The independent predictors of HIV-infection progression to IV clinical stage as: male sex infection duration >3 years parenteral way of HIV-infection transmission and primary level of CD4 lymphocytes < 350 cells/mcl.

2. The independent predictors of the pulmonary tuberculosis development in HIV-infected patients were determined as: male sex presence of VHC-co-infection and HIV-infection duration >3 years

**Keywords:** HIV-infection, prognostication, AIDS, pulmonary tuberculosis, predictors, infection duration, CD4 lymphocytes

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#### ANALYSIS OF ERYTHROPOIESIS INDICATORS IN HIV-INFECTED PERSONS AND PATIENTS WITH HIV / TB CO-INFECTION DEPENDING ON ANEMIA SEVERITY LEVEL

p. 20–23

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**The aim of the work** was the analysis of erythropoiesis (EP) in HIV-infected persons and patients with HIV/TB co-infection depending on anemia severity.

**Methods of research:** the study included 124 patients (62 patients with HIV-infection and 62 patients with HIV/TB co-infection). The control group included 32 practically healthy donors. All patients underwent the determination of anemia severity and erythropoiesis indicators.

**Results.** HIV-infected persons with anemia of III severity degree has erythropoietin (ERO) content  $14,3 \pm 1,5$  iUn/ml that is essentially lower than in the control group and comparison group ( $p < 0,001$ ). ERO content in blood serum of patients with HIV/TB co-infection with anemia I, II and III is essentially higher ( $135,8 \pm 38,7$ ,  $203,7 \pm 58,3$  and  $330,1 \pm 127,2$  iUn/ml) respectively against the same value in the control and main groups ( $23,7 \pm 1,12$  iUn/ml and  $21,4 \pm 1,89$  iUn/ml,  $p < 0,001$ ) – in 8 times.

**Conclusions.** The analysis of erythropoiesis indicators revealed the reliably low level of erythropoietin in patients with HIV-infection at severe anemia compared with the control group and patients with HIV/TB co-infection and the reliably high erythropoietin level in patients with HIV/TB co-infection at middle and severe anemia compared with the control and main groups

**Keywords:** anemia, HIV-infection, HIV/TB co-infection, erythropoietin

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## RESEARCH OF PREVALENCE OF POLYMORPHISM OF THE TLR 9 TYPE GENE IN PATIENTS WITH INFECTIOUS MONONUCLEOSIS, CAUSED BY EPSTEIN-BARR VIRUS

p. 24–28

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*There was studied the prevalence of -1486 T/C polymorphism of TLR-9 gene in 52 patients with infectious mononucleosis (IM), caused by Epstein-Barr virus. Three main genotypes of -1486 T/C of TLR-9 gene: TT, TC, CC were identified based on obtained results. The study of the frequency of appearance of separate genotypes in patients with IM revealed the dominance of CC and TT genotypes compared with the control group. The study of the distribution frequency of -1486 T/C-polymorphism of TLR-9 gene for different genotypes demonstrated the specificity of CC genotype changes in patients with IM and the absence of such changes for TT and TC genotypes.*

**Aim of research.** *The study of the frequency of -1486 T/C polymorphism of TLR-9 gene in patients with IM, caused by Epstein-Barr virus.*

**Materials and methods.** *The study for determining -1486 T/C polymorphism of TLR-9 gene was realized in 52 patients with IM. Among them women – 31 (59,6 %), men - 21 (40,4 %) in the age diapason from 18 to 34 years. The control group for studying the prevalence of - 1486 T/C-polymorphism of TLR-9 gene consisted of 40 healthy donors. The mean age 24,2±2,4 years, from 18 to 44 years.*

*For revealing DNA of EBV by the method of the reverse transcription of PCR with hybridization-fluorescent detection of amplification products, sets of reagents Amplisens (Russia) were used. The polymorphic zone -1486 T / C, rs187084 of TLR9 gene was used by PCR amplification in real time by determining the length of restrictive fragments of PCR using NcoI restrictive fragment and oligonucleotide primers.*

**Results.** *The analysis of results of -1486 T/C polymorphism of TLR-9 gene allowed to identify three main genotypes – TT, TC, CC. The study of the frequency of separate genotypes detection allowed to establish the prevalence of CC and TT genotypes compared with the heterozygotic TC genotype. The study of the distribution frequency of -1486 T/C-polymorphism of TLR-9 gene for different genotypes demonstrated the specificity of CC genotype changes in patients with IM and the absence of such changes for TT and TC genotypes.*

*Our research established the correlation between -1486 TLR-9 C/C-polymorphism with IM that proves the important role of mediated TLR signalization in the pathogenesis of EBV infection. The study of genes polymorphism among receptors that take part in recognizing a virus is necessary for determining the genetic background, connected with the infection risk, disease course and possible IM results. It allows to reveal risk groups among patients and to carry out the timely therapy.*

### Conclusions:

1. *It was proved, that - 1486 T/C polymorphism of TLR-9 gene is detected reliably more often in patients with IM than in the control group.*

2. *The distribution of -1486 T / C polymorphism of TLR-9 allowed to reveal the association of CC genotype with manifest forms of IM*

**Keywords:** *Epstein-Barr virus, Toll-like receptors, polymorphism, prevalence*

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- CHOICE OF A THROMBOLYTIC FOR PULMONARY THROMBOEMBOLISM TREATMENT**
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**Aim of the study** was to choose the optimal thrombolytic therapy for massive and submassive TEPA.

**Materials and methods.** 102 patients with massive and submassive embolism of lungs (Miller index > 17) were arbitrarily divided for administrating 100 mg of the recombinant tissue activator of plasminogen (r-tPA) or 3 mln of UN of streptokinase. The control multi-spiral computer tomography of breast organs (MSCT BO) or angiopulmonography (APG) was realized in 2–3 days after thrombolysis. For calculating the statistical importance of the difference of the number of patients by the concomitant pathology and sex, there was used  $\chi^2$  with Ets correction. Mann-Whitney criterion was used for calculating the difference by age.

**Results.** There was established the advantage of using r-tPA in hemodynamically unstable patients. There was established the advantage of using streptokinase in patients with the disease duration more than 1 day. There was proved the effectiveness of repeated sessions of thrombolysis. There was established, that it's possible to prevent hemorrhagic complications of thrombolysis if to reveal its contraindications accurately.

**Conclusions.** Alteplase must be used in hemodynamically unstable patients due to the faster effect comparing with streptokinase. Alteplase or streptokinase must be used for hemodynamically stable patients with massive and submassive pulmonary embolism. The repeated TLT is equally effective as thromboembolotomy at insufficient effectiveness of thrombolysis. For preventing hemorrhagic complications, the detail examination of patients is necessary to reveal possible sources of fatal bleeding and determination of contraindications to TLT

**Keywords:** thromboembolism of pulmonary artery, computer tomography, Miller index, streptokinase, alteplase

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## CARDIAC ARRHYTHMIAS IN PATIENTS WITH ASTHMA-COPD ASSOCIATED PATHOLOGY

p. 33–38

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**The aim** of the study was to reveal features of cardiac arrhythmias in patients with the associated pathology of bronchial asthma and COPD, estimation of co-morbid cardiovascular diseases and the cardiovascular risk degree.

**Materials and methods.** The study included patients with the associated of asthma and COPD and also patients with bronchial asthma and COPD without association signs. All patients underwent: the general clinical examination, spirometry, Holter ECG monitoring, echocardiography and determination of the speed of pulse wave distribution.

**Results.** According to the data of day ECG monitoring, there was revealed the high frequency of arrhythmias registration in patients with bronchial obstructive diseases, especially



often, ventricular and supraventricular arrhythmias were detected in patients with COPD and ACCS. The analysis of heart rate variability revealed statistically lower temporal indices in patients with COPD and ACCS comparing with ones in patients with BA. Even more negative changes of these heart rate and variability indices were revealed in patients with ACCS with the high level of bronchial obstruction, at expressed symptoms of the main disease and at the concomitant cardiovascular pathology.

Patients with ACCS demonstrated essential statistically reliable connections between indices of heart rate variability and hemodynamic parameters.

**Conclusions.** Patients with COPD and associated bronchial obstructive pathology demonstrated more expressed changes of heart rate variability indices compared with patients with BA. More expressed negative changes of the heart rate variability were detected in patients with ACCS with the high level of symptoms and bronchial obstruction

**Keyword:** associated pathology of bronchial asthma and COPD, arrhythmia, heart rate variability

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## EFFECT OF ATORVASTATIN ON CLINICAL MANIFESTATIONS OF GOUT COMORBID WITH ARTERIAL HYPERTENSION

p. 39–44

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*Aim of the work* was to determine a possible effect of atorvastatin on clinical symptoms of gout, comorbid with arterial hypertension.

*Materials and methods:* 56 patients of middle age with gout and arterial hypertension were divided in groups of the standard treatment ( $n=26$ ) and one with additional atorvastatin in 20 mg/day ( $n=30$ ), the observation period was  $43\pm 9$  days.

*Results:* There were observed the significant decrease of hyperemia of injured articulations ( $p=0,03$  for **metatarsophalangeal articulations**), insignificant decrease of the circle ( $p=0,17$ ), increase of motility of involved articulations ( $p=0,19$ ), compared with the control group, and wasn't revealed any influence on the pain intensity by VAS and on clinical manifestations of arterial hypertension or office arterial pressure.

*Conclusion:* atorvastatin addition to the standard gout therapy and arterial hypertension has the moderate anti-inflammatory effect, without influencing the pain intensity, arterial pressure and clinical manifestations of arterial hypertension

**Keywords:** gout, arterial hypertension, clinical course, pleiotropic effects, anti-inflammatory action, atorvastatin

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#### SYSTEMATIZATION OF RISK FACTORS OF MALADJUSTMENT STATES FORMATION IN STUDENTS UNDER MODERN CONDITIONS

p. 44–48

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**Aim of the work:** To systematize pathogenetically important factors of adaptation disorders in students of the medical university.

**Materials and methods of research:** the complex examination of 412 students of I–III years of Kharkov national medical university, 17–22 years old, was realized, observing principles of bioethics and deontology.

All examined persons were divided in three groups: 1 group – 215 of students-dwellers of the Eastern Ukraine; 2 group – 87 students-dwellers of Lugansk and Donetsk regions, who entered Kharkov national medical university before the beginning of ATO; 3 group – 110 students-migrants from ATO zone.

**Research methods:** clinical-anamnestic, psychodiagnostic, statistical.

**Results.** The research results demonstrated that students-migrants express the higher level of adaptation disorders compared with ones of I and II groups. Students relate to factors that influence adaptation complications: life stereotype change, difficult learning material, severe learning discipline, necessity to work out missed activities and lectures. The stress factors for students-migrants are a necessity to adapt in the new collective, abrupt change of the life stereotype, new social status – constrainedly migrated persons.

Expressed manifestations of anxiety and depression are typical for patients with adaptation disorders (in overwhelming majority students of III group).

It was established, that deviations of scales of depression, hypochondria, hysteria, psychopathy, psychasthenia are typical for personal profiles of women with maladjustment signs. Men with adaptation disorders most often demonstrate deviations of scales of hypochondria, depression, hypomania, schizophrenia.

**Conclusions.** Students relate to factors that influence adaptation complications: life stereotype change, difficult learning material, difficult terminology, necessity to work out missed activities and lectures. The risk factors of adaptation disorders formation for students-migrants are a necessity to adapt in the new collective, abrupt change of the life stereotype, new social status – CMP; high indices of anxiety and depression; prevalence of psychopathic, hysterical and depressive features

**Keywords:** medical students, adaptation disorders, risk factors, psychosocial factors, personal features

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#### ETIOLOGICAL STRUCTURE OF INTRAUTERINE INFECTIONS IN PREGNANT AND NEWBORNS WITH A COMPLICATED COURSE OF THE EARLY NEONATAL PERIOD

p. 48–54

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**Aim of research** – the study of the etiological structure of intrauterine infection in pregnant and estimation of their influence on the early neonatal period.

**Materials and methods.** The material for the study was venous blood of pregnant, umbilical blood, breast maternal milk, mother's saliva, newborn's saliva of 114 pairs "mother-newborn", divided in two groups – control one of physi-

ological course of pregnancy, childbirth and early neonatal period and the main one with clinical symptoms of IUI. The diagnosis was proved by laboratory serological examinations for determining concentrations of IgM to *Mycoplasma hominis*, *Chlamydia trachomatis*, *Ureaplasma urealyticum*, to the herpes simplex virus and concentration and avidity index of specific IgG to HSV, to the virus of 6 type herpes, to the cytomegalovirus. The cytoscopic method was used together with serological ones to diagnose the cytomegaloviral infection.

**Research results.** The increased concentration of IgM antibodies to *M. hominis* was revealed in the biological material (venous and umbilical blood) of pairs "woman-newborn" with the complicated course of the neonatal period in 9,1 % of examined persons, in 45,4 % of pairs – IgM to *U. urealyticum*, and in 81,8 % -to *Ch. Trachomatis*. IgM to the virus of herpes simplex virus (HVS) were revealed in 19,35 % of samples of venous blood, in 9,67 % of saliva samples and in 6,45 % of samples of breast milk of women; and IgM concentrations to HVS were (0,342±0,06) IU/ml, (0,117±0,04) IU/ml and (0,438±0,001) IU/ml, respectively. Most samples of the biomaterial included low-avid IgG antibodies to the herpes simplex virus, 76 % of samples of women's venous blood, 64 % of samples of breast milk and 38,7 % contained low-avid IgG to 6 type herpes virus. The cytomegaloviral infection in this group was diagnosed in 24 % of women and 32 % of newborns. The associated bacterial and viral infection were revealed in 65 % of examined pairs "mother-newborn" with the complicated course of the neonatal period, the triple infection with chlamydias, herpes simplex virus and cytomegalovirus was noted in 14 %; the association of herpes simplex virus, cytomegalovirus and ureaplasma was detected in 5 %. The double chlamydia and herpes viral infection of 6 type were observed in 15 % of examined persons, at that these infections were added with ureoplasma in 7 %, with mycoplasma – in 5 %. The mix-infection of urogenital agents – chlamydias and ureaplasma was associated with the cytomegalovirus in 4 % of cases.

#### Conclusions

1. As a result of the realized study, the diagnosis was confirmed in all newborns with a suspected intrauterine infection.
2. Mix-infections – Chlamydia, associated with viruses of the herpetic group occupy the leading place in the etiological structure of IUI agents, and the neonatal period is most complicated in children with double or triple infection.
3. The leading clinical symptoms in children with IUI are the intrauterine development delay, intrauterine pneumonia, conjugated icterus, conjunctivitis

**Keywords:** intrauterine infections, pregnancy, early neonatal period, mono-infection, mix-infections, clinical symptoms

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#### **ANALYSIS OF COMPLICATIONS THAT OCCURRED IN THE PERIOPERATIVE PERIOD, WHEN USING DIFFERENT MODES OF FLUID THERAPY**

**p. 55–58**

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**Aim:** To realize the clinical analysis of post-surgical complications in patients, who received intraoperative infuse therapy by the method of the restrictive mode of fluid resuscitation and purposeful fluid therapy for providing the adequate and stable hemodynamics in perioperative period and also for preventing the complications development.

**Materials and methods:** the study was realized in 176 patients, who underwent surgical interventions in orthopedic oncology. The restrictive mode of fluid resuscitation was applied in 88 cases, and in 88 ones – the purposeful fluid therapy. The central hemodynamics was studied by the method of Cubichek tetrapolar rheography, coagulogram indications, dieresis speed, blood serum creatinine, frequency of postoperative nausea and vomit and enteroparesis were studied.

**Research results:** the frequency of coagulopathy observations at purposeful fluid therapy didn't reliably exceed the frequency of coagulopathy in patients with the restrictive mode. Patients, who underwent purposeful fluid therapy demonstrated the decrease of dieresis speed, postoperative nausea and vomit and enteroparesis reliably more seldom. At providing purposeful fluid therapy, there was observed the more stable hemodynamics, whereas patients with the restrictive mode of resuscitation reliably more often needed for the additional hemodynamic correction, which needed the use of vasopressors in 67 % of cases and unplanned increase of infusion therapy volume in 36 % of cases.

**Conclusions:** the risk of complications of GIT and kidneys decreases at using purposeful fluid therapy, and the more stable postoperative hemodynamics comparing with the restrictive mode is guaranteed

**Keywords:** restrictive fluid resuscitation, purposeful fluid therapy, hemodynamics, vasopressors, hypovolemia, organ perfusion

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