



Table

Alleles' frequency	Level of heterozygosity	Level of homozygosity	Alleles' positivity	Armitage's test
OR by association with allele T				
[1]<->[2]	[11]<->[12]	[11]<->[22]	[11]<->[12+22]	Common OR
OR=0.49 95%CI=0.30-0.81 $\chi^2=7.77$ p=0.005	OR=0.74 95%CI=0.23-2.43 $\chi^2=0.25$ p=0.62	OR=0.17 95%CI=0.05-0.64 $\chi^2=7.59$ p=0.006	OR=0.49 95%CI=0.16-1.57 $\chi^2=1.48$ p=0.22	OR=0.38 $\chi^2=11.4$ p<0.001
OR by association with allele C				
[2]<->[1]	[22]<->[12]	[22]<->[11]	[11+12]<->[22]	Common OR
OR=2.02 95%CI=1.23-3.33 $\chi^2=7.77$ p=0.005	OR=4.27 95%CI=1.86-9.77 $\chi^2=12.58$ p=0.003	OR=5.77 95%CI=1.56-21.28 $\chi^2=7.59$ p=0.006	OR=4.46 95%CI=1.98-10.05 $\chi^2=14.16$ p<0.001	OR=2.55 $\chi^2=11.4$ p<0.001

Therefore, the results undertaken in study testify that determination of -786C allele NOS3 in patients with arterial hypertension and diabetes type 2 is associated with higher risk of carotid injury due to the Armitage's risk model.

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**THE ROLE OF GROWTH FACTORS IN PATIENTS WITH HEART FAILURE AND PRESERVED EJECTION FRACTION**

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At the last decades, the paradigm about the exclusive role of the renin-angiotensin-aldosterone system in target organs injuries during chronic heart failure (HF) is the basic concept in the most of the clinical trials. But, it is also essential to provide researchers with information concerning the role of different biomarkers which could affect cardiovascular continuum. In our opinion, the superfamily of growth factors, in particular, vascular endothelial growth factor-A (VEGF-A), may keep a definite position in the development of HF.

We have included 288 patients with diagnosis of non-ischemic HF with preserved ejection fraction (HFpEF) (mean of LVEF of patients was 53,8±4.72%) in the study. All patients were inspected with echocardiographic and Doppler ultrasound and immunoassay detection of VEGF-165 (type A).

Using unadjusted regression model we have analyzed interrelationship between the VEGF-165 concentration and parameters of LV remodeling in patients with HFpEF

We have set the reliable negative correlation between level of VEGF-A and LV mass (R=-0.61; p=0,007) and myocardium mass index (R=-0,54; p=0,004). Nevertheless, the observed data showed unreliable regression between the decrease of the VEGF-A level and the relative wall thickness as with VEGF-A level and index EDV/LV mass. In non-parametric ANOVA we have found the dependency of the distribution of medians of the VEGF-A level on the eccentric and concentric hypertrophy (H=6,58; p=0,04).

However, we observed strong positive correlation between VEGF and ratio of early and late peak velocity (Ve/Va) and negative correlation with VEGF and isovolumetric relaxation time. The decrease of VEGF level also associated with the shortness of duration time of early peak of diastolic flow (DTe) (table).

Table

Index	IVRT, c	DT E, c	Ve/Va
Level VEGF-165	r=-0,52 (p=0,03)	r=0,47 (p=0,09)	r=0,65 (p=0,011)

Therefore, in patients with HFpEF the decrease of VEGF-165 associated with the increase of left ventricle mass and the strongest link set in condition of eccentric and concentric hypertrophy. In addition, there is the direct dependency between the level of VEGF and the parameters of diastolic function of left ventricle.

**Shuper V.O.**  
**CHARACTERISTICS OF THE CONTENT OF EICOSANOIDS IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE UNDER CONDITIONS OF COMORBIDITY WITH CORONARY HEART DISEASE**

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Comorbidity of two or more different diseases influences on the course of each of them, causing difficulties in the selection of therapy, increases the risk of complications, and worsens the prognosis for the patient. Close relationship of the respiratory and cardiovascular systems in patients over the age of 40 years contributes to the recurrent combination of chronic obstructive pulmonary disease (COPD) and coronary heart disease (CHD). Nowadays COPD has the 4th place among all causes of death, accounting for 4% in their overall structure. CHD and heart failure (HF) become among the leading, but not always timely diagnosed, causes of death in patients with COPD. The risk of death from cardiovascular disease in patients with COPD increases by 2-3 times and accounts for about 50% of the total number of deaths. The most formidable predictor of fatal complications in COPD associated with CHD is myocardial infarction as a consequence of thrombotic complications in the microcirculatory system. Aggregation of thrombocytes is stimulated by eicosanoids, which are the products of metabolism of arachidonic acid. Systemic chronic inflammation



in COPD stimulates the production of a large number of inflammatory mediators, among which leukotrienes play a significant role, in particular, leukotriene B<sub>4</sub> (LTB<sub>4</sub>) and thromboxanes (Tx). The investigation of the role of eicosanoids - important mediators of the inflammatory cascade in the progression of COPD, combined with CHD, as well as the search for effective ways of influencing them, will increase the results of treatment and the quality of life of patients with comorbidity of COPD and CHD.

The purpose of the study was to investigate the characteristics of the content of eicosanoids - leukotriene B<sub>4</sub> and thromboxane A<sub>2</sub> (by stable metabolite B<sub>2</sub>) in the blood serum and urine of patients with COPD combined with CHD.

There were investigated 37 patients with exacerbation of COPD (clinical group B, GOLD II) associated with CHD – the main group, 27 patients with exacerbation of COPD (I<sup>st</sup> comparison group) and 30 patients with CHD, stable angina pectoris (II<sup>nd</sup> comparison group). Levels of TxB<sub>2</sub> and LTB<sub>4</sub> in the blood serum and urine were examined in all patients and 32 healthy volunteers, using certified in Ukraine reagents TxB<sub>2</sub> and LTB<sub>4</sub> ELISA kit (Enzo Life Sciences, USA) by the method of enzyme immunoassay.

The concentration of TxB<sub>2</sub> in the blood serum reached (3382.3 ± 290.8) pg/ml in the patients of the primary group, exceeding the average level of healthy volunteers by 22.2 times (p <0.001), the same parameter of patients with exacerbation of COPD without CHD by 2.2 times (p <0.01) and by 1.4 times (p <0.05) in patients with CHD. In patients from the primary group, the serum LTB<sub>4</sub> content was the highest among all examined patients, reaching (6678.0 ± 375.4) pg/ml and exceeding the norm by 20.3 times (p <0.001). Evidently, systemic inflammation in COPD, combined with inflammatory manifestations in CHD, provided maximum concentration of this eicosanoid in the blood serum. The concentration of TxB<sub>2</sub> in the blood serum of patients from the I<sup>st</sup> comparison group was the lowest among all examined patients, however, it exceeded the reference norm by 10 times (p <0,001).

Thus, in the blood serum of patients with COPD associated with CHD, the highest concentrations of LTB<sub>4</sub> and TxB<sub>2</sub> were marked, compared to patients with COPD without CHD and with CHD without COPD that was accompanied by increasing of their excretion with urine. The strength and direction of correlation links between concentrations of these eicosanoids in blood serum and indices of bronchial patency indicate their negative influence at bronchial patency of patients with a combination of COPD and CHD. Correlations between concentrations of LTB<sub>4</sub> and TxB<sub>2</sub> in the blood serum of patients with combined pathology confirm their mutually reinforcing effect to systemic inflammation according to their biological actions.

**Sluhenska R.V.**

#### **THE PHYSICAL CULTURE AND HEALTH TECHNOLOGIES USE DURING PHYSICAL EDUCATION CLASSES FOR STUDENTS OF HIGHER EDUCATIONAL ESTABLISHMENT**

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The systems of physical education teaching for students at higher educational institutions of Ukraine testifies that scientific principles of using very attractive modern highly effective physical culture technologies are not sufficiently developed in modern theory and physical education method.

The physical education traditional system turns out to be more effective at higher educational institutions (schools), as it is provided with gyms, specialized equipment. The program may be valid with the absence of such conditions, but physical education teachers shouldn't carry all the weight of its development on the proposed standards in the program, that is, actually transfer the burden of responsibility for the effectiveness of physical education system from themselves to students.

It is necessary to indicate (choose) kind of physical exercises during optimization of physical education practical classes, using physical culture and health technologies, and then, according to the above mentioned, focus on such important characteristics as time and features of student contingent. Then it is substantial to select forms and methods of physical culture and health technologies, taking into account presence or absence of sports equipment and musical accompaniment, the rate of exercise execution, the amount of training load, periodicity.

Therefore, physical education practical classes for students at the higher educational institution (school) which are optimized as recreational lessons with using physical training and health technologies are based on the laws of training motor activities and physical qualities development of the youth, peculiarities of physical education method of student contingent. Such classes comply with basic principles of physical education. Compulsory pedagogical control and physical qualities development monitoring, physical exercises diversity use from all directions of physical education and health technologies.

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#### **DIAGNOSTIC MARKERS OF HEPATORENAL SYNDROME**

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Hepatorenal syndrome (HRS) is a common complication in patients with alcohol liver cirrhosis (ALC) and it is associates with higher mortality in proportion to progressive HRS severity. However, the most common indicator of renal function, serum creatinine (Scr), may be an unreliable surrogate for glomerular filtration rate (GFR) due to the