



Rusnak I.T.

PHYSICAL ACTIVITY AS A FACTOR TO PREVENT DISEASES, RECOMMENDATIONS

*Department of Internal Medicine, Physical Rehabilitation and Sports Medicine
Higher State Educational Establishment of Ukraine
«Bukovinian State Medical University»*

Among the factors that form the basis promoting many diseases, including cardiovascular ones, there is lack of physical activity. In 2008, about 31% of people (28% men and 34% women) all over the world aged 15 and older were considered to be not physically active. Approximately 3.2 million annual deaths related to physical inactivity.

Physical activity is to be understood as any body movement involving skeletal muscles with energy release. Physical inactivity (lack of physical activity) is an independent risk factor for occurring chronic diseases. Healthy people are recommended to maintain appropriate levels of physical activity throughout their life. At least 30 minutes of moderate intensity physical activity 5 times a week reduces the risk of a number of non-communicable diseases among adults. Stronger physical activity brings more health benefits and may be required for weight control.

Physical inactivity is the fourth leading risk factor for global mortality (6% of deaths in the world). In addition, physical inactivity is a major cause approximately 21-25% of breast cancer and colon cancer, 27% of cases of diabetes and approximately 30% of cases of coronary heart disease.

Worldwide there is a decrease in physical activity, while every third adult is not physically active. However, the increase in physical activity in terms of a healthy environment benefits the health of people of all age groups. WHO provides recommendations for optimal activity levels, but even minor physical activity is better than its absence. People who suffer from lack of exercise, should start with a low level of physical activity and gradually increase duration, frequency and intensity of training. To promote the benefits of physical activity it is necessary to take measures both throughout society as a whole and at the level of an individual. In 2013, WHO member states agreed on the reduction of the prevalence of insufficient physical activity by 2025 to 10% in the "Global Action Plan for the prevention of non-communicable diseases and combat them in 2013-2020". Recommendations on physical activity for adults in the United States provide at least 150 minutes of moderate intensity exercise a week.

Regular practice of physical activity appropriate levels among adults have the following positive effects on health: reduces the risk of hypertension, coronary heart disease, stroke, diabetes, breast cancer and colon cancer, depression and risk of falls; helps to strengthen bones and improve functional health; is the main determinant of energy release and therefore fulfills a crucial role in energy metabolism and maintaining proper weight.

The term "physical activity" should not be confused with "physical exercise". Exercise is one of the subcategories of physical activity, covering a planned, structured and repetitive physical activity aimed at improving or maintaining one or more components of physical fitness. In exercise physical activity also includes other types of active body movements performed during games, working, active transportation, household chores, recreation and entertainment.

Modification of lifestyle is a priority in the treatment of hypertensive patients according to the recommendations of the European Society of Hypertension (ESH) and the European Society of Cardiology (ESC) in 2013. Clinical studies show that to reduce blood pressure changes in lifestyle can be equivalent to the efficacy of the drug alone and able to safely and effectively prevent the development of hypertension or delay the use of drug therapy; to prevent, if necessary, the use of it by patients with hypertension I degree. In addition to effects blood pressure reduction, lifestyle changes contribute to the control of other factors of cardiovascular risk and clinical conditions. In the recommended approach to lifestyle changes regular exercise are envisaged, for example, at least 30 minutes of moderate physical activity within 5 - 7 days a week. Moderate aerobic exercise are walking, jogging, cycling, swimming.

Shorikov E.I., Shorikova D.V.

ENOS3T-786C GENE POLYMORPHISM DISTRIBUTION AND THE RISK OF CAROTID DAMAGE IN PATIENTS WITH CONCOMITANT ARTERIAL HYPERTENSION AND DIABETES MELLITUS TYPE 2

*Department of Internal Medicine, Clinical Pharmacology and Occupational Diseases
Higher state educational establishment of Ukraine
"Bukovinian State Medical University"*

The aim of the investigation was to study the distribution of the NOS3 T-786C gene (rs2070744) polymorphism and its relationship to the local injury of carotids in concomitant arterial hypertension (AH) and diabetes mellitus type 2 in (DM).

The distribution of gene polymorphism was estimated in 100 patients with AH and DM type 2 (basic group) and 50 healthy people. The local damage was diagnosed by measuring intima-media thickness (TIM) in right general carotids. In the primary group distribution of NOS3 T-786C was reliably deviated from the Hardy-Weinberg equilibrium ($p < 0.05$). After analysis of NOS3 gene allele association with the risk of increased TIM (> 0.9 mm) in patients with AH and DM it was confirmed the reliable changes between groups (table).

By analysis of polymorphic locuses of NOS3 gene was set variability of -786C risk allele and increase in 2,55 times its frequency in the primary group. In the group with local changes of carotids, we have set the decline (in 4,46 times) in frequency of -786T allele.



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.

Shorikova D.V., Shorikov E.I.
THE ROLE OF GROWTH FACTORS IN PATIENTS WITH HEART FAILURE AND PRESERVED EJECTION FRACTION

*Department of Internal Medicine, Clinical Pharmacology and Occupational Diseases
Higher state educational establishment of Ukraine
"Bukovinian State Medical University"*

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

Interrelationship between VEGF-A and some parameters of diastolic function of LV			
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

*Department of Internal Medicine, Clinical Pharmacology and Occupational Diseases
Higher state educational establishment of Ukraine
"Bukovinian State Medical University"*

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