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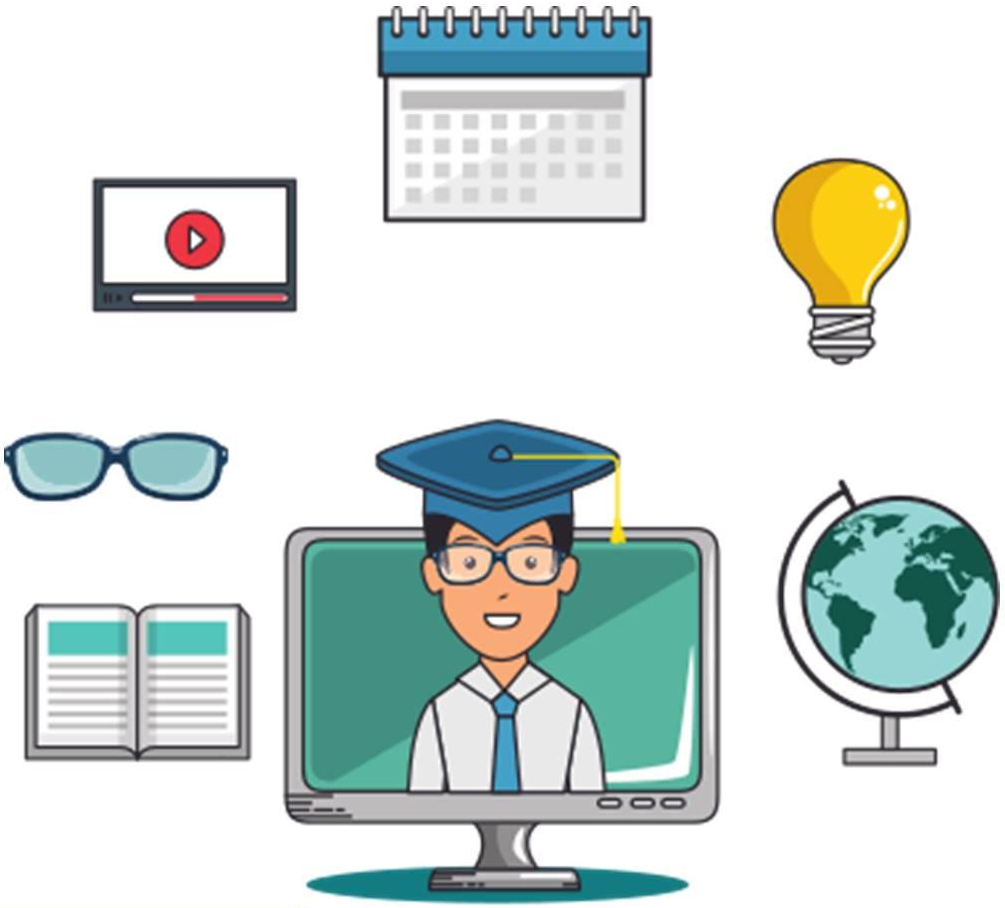

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THE STUDY OF LIPID SPECTRUM AND MARKERS OF VASCULAR INFLAMMATION IN PATIENTS WITH STABLE ANGINA PECTORIS WITH DIABETES MELLITUS

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Nizametdinova Ulugoy Jaminovna

Botirova Nigina Akramovna .

Tashkent Medical Academy,

Tashkent, Uzbekistan

Annotation. In recent decades, the role of a chronic inflammatory process in the development of cardiovascular complications in patients with coronary artery disease and diabetes has been actively discussed. Target. study of markers of the vascular inflammatory process in patients with coronary artery disease in combination with type 2 diabetes. Identify a set of laboratory parameters that can become predictors of cardiovascular complications. Materials and methods. We examined 69 patients aged 60.3±9.8 years with coronary artery disease, stable exertional angina. Patients are divided into 2 groups. Group 1 - patients with IHD (n=30), Group 2 - IHD with type 2 diabetes (n=39). Results. The study of laboratory parameters of blood serum was carried out against the background of standard therapy before and after 12±2.4 months of observation. Initially, in the 2nd group of patients, a significant excess of the level of atherogenic parameters of the lipid profile (total cholesterol, VLDL, TG) and markers of inflammation (highly sensitive C-reactive protein, fibrinorgen) was revealed compared to the 1st group. In IHD patients with DM in the 2nd group, more numerous and highly

significant relationships were registered between atherogenic lipid fractions (LDL, TG), inflammatory markers (highly sensitive C-reactive protein , fibrinogen), endothelial dysfunction parameters (brachial artery diameter), glycated hemoglobin. The analysis of the results demonstrated the absence of positive significant dynamics of the lipid spectrum, the preservation of a prolonged response to the activation of the inflammatory reaction, the indicator of which was C-reactive protein, fibrinogen, and the presence of endothelial dysfunction in both groups of patients. The results of the study indicate the persistence of a sluggish inflammatory process in the endothelium, which is a provoking factor in the destabilization of the atherosclerotic process, both in the 1st and 2nd groups of patients. Conclusion. The increased risk of atherothrombosis in both groups requires more stringent control of the effectiveness of the therapy.

Key words *: ischemic heart disease, diabetes mellitus, inflammatory markers, endothelial dysfunction.*

Introduction. The incidence of cardiovascular disease in patients with diabetes mellitus (DM) is higher than the average in the population, and the prognosis of life in patients with coronary artery disease in combination with diabetes is worse compared to the prognosis in patients without diabetes. Given the high prevalence of DM among the population and the high mortality of diabetic patients associated with cardiovascular pathology, the study of the mechanisms of development of macrovascular complications in patients with DM remains one of the most urgent tasks of cardiology and diabetology [1]. In recent decades, the role of a chronic inflammatory process in the development of cardiovascular complications in patients with coronary artery disease and diabetes has been actively discussed [2, 3]. IHD in patients with DM, compared with patients without this disease, develops at an earlier age and is characterized by more severe lesions of the coronary arteries with involvement of the distal bed [2,3]. The

degree of activity of systemic inflammation in patients with IHD and DM can be considered as the most important characteristic of the processes leading to the accelerated development of damage in the vascular wall and destructive changes in atherosclerotic plaques, which determine the relevance of the problem under study.

The aim of the work was to study the markers of the vascular inflammatory process in patients with coronary artery disease in combination with type 2 diabetes.

The study involved 69 patients (male and female) aged 60.3±9.8 years with coronary artery disease, stable exertional angina. The patients were divided into 2 groups: group 1 - patients with ischemic heart disease, stable angina (n=30), group 2 - patients with ischemic heart disease , stable angina in combination with type 2 diabetes (n=39). In both groups of patients, coronary artery disease was equally represented as stable exertional angina within FC I, II, and III. In the 2nd group, patients had type 2 diabetes in a state of compensation and subcompensation (HbA1C from 7.0 to 8.0%). The following biochemical markers of inflammation were determined: highly sensitive C-reactive protein (hs-CRP, reference values 0-3.0 mg/l) and fibrinogen - immunoturbidimetric method with the C - reactive analytical kit. proteins ” (BioSystem , Spain) on a semi-automatic open-type analyzer Clima MC-15 (Spain). Carbohydrate metabolism was assessed by the content of glucose, glycated hemoglobin (HbA_{lc}). By calculation were calculated: VLDL cholesterol: VLDL=TG/2.2; atherogenic index : (IA) = total cholesterol - HDL / HDL; The study of the vasoregulatory function of the endothelium was carried out using samples with reactive hyperemia (HR). To obtain an image of the right brachial artery (BA), measure its diameter and blood flow velocity, an ACUSON 128XP/10 USA system equipped with a 7 MHz phased array linear transducer was used. In the initial state, the VA diameter and the maximum blood flow velocity in it were measured. Then, to obtain increased blood flow, a

sphygmomanometer cuff was placed around the shoulder and inflated until complete cessation of blood flow in the PA for 5 minutes. **Statistical analysis of the research data was carried out using the EXCEL and Statistica 6.0 statistical software packages. The mean values, their standard errors, and 95% confidence interval were calculated. Results were considered statistically significant at a significance level of p<0.05.**

Research results.

Table 1. Characteristics of clinical and anamnestic data in groups of patients with coronary artery disease with no and presence

Indicators	Patients with coronary artery disease (n=33)	Patients with coronary artery disease and type 2 diabetes (n =36)
age	61.7± 9.02	59.7 ± 9.89
Husband wives	12 (35%) 21 (65%)	15 (43.5%) 21 (56.5%)
Do not smoke smoke	20 (60%) 13 (40%)	72% 28%
Duration of diabetes, years	-	6.5±5.13
IHD duration, years	9.7±4.5	7.6±6.25
Presence of hypertension Duration of hypertension	28 (85%) 10.7±5.12	34 (94%) 9.8±6.13

FC angina pectoris voltage 1 2 3	 3 (10%) 21 (64%) 9 (26%)	 fourteen%) 21 (58%) 14 (38%)
BMI, kg/m2	35.9±3.91	33±4.47
Dyslipidemia No eat	 4 (12%) 29 (88%)	 2 (4.3%) 34 (95.7%)

The patients of the 1st and 2nd groups included in the study had no statistically significant differences (p>0.05): by age, gender, individual risk factors, the presence and duration of concomitant pathology, the fact of smoking, the presence of dyslipidemia , the duration of coronary artery disease , CD2. Patients of both groups were comparable in terms of outpatient drug therapy: beta- blockers (63.6% vs. 86.4%), diuretics (72.7% vs. 59.1%), statins (27.3% vs. 8%), antiplatelet agents (45.5% and 72.7%), ACE inhibitors or angiotensin II receptor blockers (62.45% and 54.5%; 36.4% and 22.7%, respectively), calcium antagonists (45.5% and 27.3%; p<0.05) respectively in the 1st and 2nd groups, tableted hypoglycemic drugs (99.4%) - in the group of patients with DM2.

Table 2. Characteristics of biochemical parameters in groups of patients with coronary artery disease with no and presence of DM2 at the initial stage of the study

Indicators	Patients with coronary artery disease	Patients with coronary artery disease and type 2	R

	(n=33)	diabetes (n =36)	
THC, mmol / l	4.80±0.11	5.61±1.23	0.008
HDL, mmol / l	1.12±0.26	1.10±0.22	0.01
LDL, mmol / l	2.91±0.01	3.01±0.80	0.01
TG, mmol / l	2.02±0.83	2.23±1.15	0.01
VLDL, mmol / l	0.76±0.29	0.83±0.3	0.03
IA	3.70±1.19	4.11±1.53	0.01
CRP, mg/ dl	3.90±2.90	5.06±4.33	0.05
Fibrinogen, mg/ dl	380	410	0.01

n is the number of patients, p is the significance of differences

A comparative analysis of the laboratory parameters of the lipid profile at the initial stage revealed a significant excess of total cholesterol, LDL in the 2nd group of patients with coronary artery disease and diabetes compared with the 1st group (table 2). The results obtained are consistent with the literature data on the presence of a more pronounced impairment of the atherogenic lipid profile in patients with hyperglycemia associated with CAD [3, 10]. Evaluation of the parameters of the inflammatory response registered a significantly higher level of CRP and fibrinogen in the 2nd group of patients, respectively, 1.3 times and 1.1 times more than in the 1st group. In the 1st group, there is a tendency to increase the level of CRP and fibrinogen. It is assumed that in DM2, an increase in CRP can exacerbate endothelial dysfunction, accelerate the development of atherosclerotic processes, cause oxidative stress, reduce thromboresistance , increase platelet aggregation and their adhesive properties.

In patients of group 1 at rest, the VA diameter was 4.47±0.06 mm. In the phase of reactive hyperemia (immediately after decompression), there was an increase in the diameter of the VA by 7.4%, amounting to 5.17±0.89 mm (P>0.05).

In patients of the second group, the initial diameter was 3.30 ± 0.48 mm,

which is 25.9% lower than this indicator in patients of group 1, which indicates more pronounced endothelial dysfunction in this group of patients. The measurement of this parameter immediately after the test with RG showed that it increased by 7.4% from the initial level, amounting to 3.97 ± 1.054 mm (P> 0.05), respectively, which remained at 60 seconds after the test, amounting to 3.83 ±0.72mm. According to the literature, it is patients with DM who have a more pronounced degree of endothelial dysfunction, along with the severity of atherosclerosis, and the risk of progression of coronary artery stenosis.

The assessment of correlation relationships between the studied parameters in the 2nd group revealed the presence of direct correlations between significantly high levels of atherogenic lipids, a qualitative indicator of the presence of DM and an increased level of glycated hemoglobin (HbA1C and LDL ; r=0.4 at p=0.01; DM and LDL; r=0.3 at p=0.03; HbA1C and TG; r=0.3 at p=0.03), which may indicate the involvement of carbohydrate metabolism disorders in the pathogenesis of coronary atherosclerosis

Discussion. It is believed that chronic subclinical inflammation is part of the insulin resistance syndrome , and cytokines serve as predictors of vascular complications of T2DM [5].

Currently, an increase in the level of inflammatory markers in blood plasma is considered as a significant risk factor for atherosclerotic vascular damage. The presence of DM is associated with an increase in the level of markers of subclinical systemic inflammation. In particular, it was found that the level of CRP positively correlates with the level of glycosylated hemoglobin [6]. In CAD patients with DM, the content of inflammatory markers, such as CRP, fibrinogen, and peripheral blood leukocytes, is higher than in CAD patients without DM [7]. The results of the correlation analysis confirmed the presence of a close relationship between lipid profile parameters and markers of vascular inflammation in patients of both

groups, which may determine their role in initiating atherosclerotic changes.

The degree of activity of systemic inflammation in patients can be considered as the most important characteristic of the processes leading to the development of destructive changes in the atherosclerotic plaque. An increase in the level of pro- inflammatory cytokines CRP and fibrinogen in patients with coronary artery disease without and with type 2 diabetes is described in the literature [13, 14]. A comprehensive meta-analysis of 54 studies of CRP in 2010 showed that this marker has a degree of influence on the vascular wall similar to or more pronounced than blood pressure or cholesterol levels. A persistently elevated CRP level is a major risk factor for recurrent vascular disease.

Conclusion

The results of a comparative analysis of the studied biochemical characteristics indicate that in patients with coronary heart disease, stable angina in combination with type 2 diabetes, compared with patients with coronary artery disease without diabetes, against the background of equally elevated levels of atherogenic parameters of the lipid profile and disorganization of the endothelial system, a significant hyperactivation of markers of the vascular inflammatory response was registered. due to the parameters of CRP, and fibrinogen. Based on the results obtained, the implementation of dynamic monitoring of the presented laboratory markers can have an important prognostic value in terms of developing and implementing measures for the timely correction of ongoing drug therapy, which, by increasing patient adherence to treatment, will certainly lead to a decrease in the risk of cardiovascular complications.

1. Aleksandrov A.A. Diabetes mellitus: a disease of "exploding" plaques. Consilium medicine . 2001;1(10):464–468.

2. Lukyanchikov BC, Zvereva I.V. Pathogenesis and prevention of vascular complications in metabolic syndrome and type 2 diabetes mellitus. Russian medical journal. 2008;4: 14–20.
3. Titov V.N. Commonality of atherosclerosis and inflammation: specificity of atherosclerosis as an inflammatory process. Russian medical journal. 2009;5: 44–49.
4. Serik S.A., Stepanova S.V., Volkov V.I. Inflammatory activation in stable and unstable angina // Ukr . therapist. magazine - 2002. - No. 4. - S. 38-43.
5. Altman R. Risk factors in coronary atherosclerosis athero- inflammation: the meeting point // Thrombosis J. - 2003. - Vol. 1, No. 1. - P. 4-14.
6. Aukrust P., Ueland T., Lien E. et al. Cytokine network in congestive heart failure secondary to ischemic or idiopathic dilated cardiomyopathy // Amer. J. Cardiology. - 1999. - Vol. 83, No. 3. - P. 376-382.
7. Deswal A., Petersen NJ, Feldman AM et al. Cytokines and with ytokine receptors in advanced heart failure: an analysis of the cytokine database from the vesnarinone trial (VEST) // Circulation. - 2001. - Vol. 103, No. 16. - P. 2055-2059.
8. Ikonomidis I., Andreotti F., Economou E. et al. Increased proinflammatory cytokines in patients with chronic stable angina and their reduction by aspirin // Circulation. - 1999. - Vol. 100, No. 8. - P. 793-798.
9. Mann DL Inflammatory mediators and the failing heart: past, present, and the foreseeable future // Circ. Res. - 2002. - Vol. 91, No. 11. - P. 988-998.
10. Ono K., Matsumori A., Shioi T. et al. Cytokine gene expression after myocardial infarction in rat hearts: possible implication in left ventricular remodeling // Circulation. - 1998. - Vol. 98, No. 2. - P. 149-156.
11. Opal SM, DePalo VA Anti-Inflammatory with ytokines // Chest. - 2000. - Vol. 117, No. 4. - P. 1162-1172.

12. Orus J., Roig E., Perez-Villa F. et al. Prognostic value of serum cytokines in patients with congestive heart failure // J. Heart. lung transplant . - 2000. - Vol . 19, No. 5. - P. 419-425.
13. Parissis JT, Adamopoulos S., Karas SM et al. An overview of inflammatory cytokines cascade in chronic heart failure // Hellenic J. Cardiology. - 2002. - No. 43. - P. 18-28.
14. Ridker PM, Rifai N., Pfeffer M. et al. Elevation of tumor necrosis factor-alpha and increased risk of recurrent coronary events after myocardial infarction // Circulation. - 2000. - Vol. 101, No. 18. - P. 2149-2153.
15. Robbins M., Topol EJ Inflammation in acute coronary syndromes // Cleveland Clinic. J. Med . - 2002. - Vol . 69 (Suppl . 2). - P. 130-142.