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Modern markers of diabetic cardiomyopathy

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Introduction: Currently, there is a marked increase in the incidence of diabetes and the severity of its cardiovascular complications is largely determined by a specific change of myocardium - diabetic cardiomyopathy. Search for new biomarkers of diabetic cardiomyopathy and identify major pathogenetic mechanisms of development determines the choice of therapy and prognosis.

Aim: To evaluate the effect of resistin on the formation of structural and functional parameters of the left ventricle (LV) of the heart in patients with diabetes mellitus (DM) type 2 with preserved and reduced ejection fraction. In patients with type 2 diabetes to compare resistin and MMP-9 concentrations in the blood that control the exchange of extracellular matrix

Materials and Methods: The study included 90 patients with type 2 diabetes with CHF II-III NYHA class, the average age was 62 years. 60 people of them had a left ventricular ejection fraction (LVEF) over 55% and 30 people - less than 45%. Patients underwent echocardiography, Holter ECG monitoring, determination of the concentration of resistin and MMP-9 in the blood.

Results: According to echocardiography in 60 patients with preserved EF concentric left ventricular hypertrophy (LVH) was diagnosed in 29 people, eccentric LVH - in 12 people. A positive correlation was found between resistin level and end-diastolic dimension LV ($r=0.43$, $p=0.020$) in the group with concentric LVH. Negative correlation was found between resistin level and end-diastolic dimension LV ($r = -0.61$ $p=0.000$). In patients with type 2 diabetes with concentric left ventricular hypertrophy was a statistically significant increase in the number of supraventricular extrasystoles compared with a group of patients with eccentric LVH (202 [0; 374] vs 20 [0; 159], $p=0.025$). Moreover, in patients with concentric LVH was found a positive correlation between resistin level and supraventricular extrasystoles quantity ($r=0.34$; $p=0.033$). In patients with reduced LVEF higher level of MMP-9 and resistin fell on a group of patients with the lowest LVEF. In the analysis, in patients with type 2 diabetes with reduced LVEF was found significant correlation relationship between resistin and MMP-9 level, which is close to statistical significance ($r=0,45$, $p=0.057$).

Conclusions: Physiological secretion of resistin in patients with type 2 diabetes with myocardial hypertrophy can be seen as an adaptation mechanism aimed at reducing the rate of rise of heart failure. In patients with type 2 diabetes with concentric left ventricular hypertrophy, increased resistin secretion is a risk factor for supraventricular arrhythmias. Increased MMP-9 level in the blood of patients with type 2 diabetes with evidence of LV dilatation of the heart and/or myocardial hypertrophy contributes to increasing severity of contractile dysfunction of the left ventricular myocardium.

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