

The Role of Interleukin-6 in Pathophysiology of Myocardium Involvement in Diabetes Mellitus Type II

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Background: According to the statistics of the World Health Organization (WHO), the number of patients with diabetes has increased 4 times and still continue to grow steadily. At the same time, diabetes caused 1.5 million deaths in 2012. In addition, the higher level of glucose in the blood causes an increased risk of cardiovascular disease, including myocardial pathology.

The development of cardiomyopathy in patients with type 2 diabetes is determined by the change in metabolism of visceral adipose tissue, which increases the level of factors that enhance insulin resistance - tumor necrosis factor (TNF)- α , interleukin-6 (IL-6) and others. The aim of this study was to determine the effect of IL-6 on the formation of myocardial pathology in patients with type II diabetes with normal and high body mass.

Methods: One hundred and two patients with diabetes mellitus type II were included in this study (the duration of diabetes is 1-9 years, the severity is moderate, without severe diabetic complications). The control group included 20 almost healthy persons, matched by age and sex. Body mass, height, circumference of the waist and hips were determined in the patients under examination, followed by the calculation of the body mass index (BMI). The serum level of IL-6 was determined by ELISA using Vector-Best reagent kits. Echocardiographic method was used to measure the diastolic function (maximum peak diastolic filling during rapid filling of the left ventricle E, E / A ratio)

Results: In the first group, the patients with type II diabetes and BMI below 24.99 (20 people) were included. In the second group was the patients with BMI above 25 (82 patients). IL-6 in the control group was 8.83 ± 0.22 , while it was 10.02 ± 0.26 in the 1st group; 13.78 ± 0.24 in the 2nd group, which the difference was significant. Early diastolic filling E was 0.71 ± 0.01 in the control group, while it was 0.63 ± 0.01 in the 1st group and 0.58 ± 0.006 in the 2nd group. The ratio of diastolic filling E / A in the control group was 1.4 ± 0.075 , while 0.94 ± 0.03 in the 1st and 0.81 ± 0.022 in the second groups, which was also significant. Correlation between IL-6 and E / A ratio was found in patients of the 2nd group 0.285. In patients of the two groups with BMI greater than 25, there was a high correlation between IL-6 and E / A ratio; nevertheless, in the control group and in the 1st group no correlation was detected.

Conclusion: The significant correlation suggests that the formation of diastolic dysfunction, as the onset of the formation of heart failure in patients with diabetes, contributes to the mediator of inflammation and adipokine IL-6, and this relationship is particularly noticeable in patients with elevated body mass. The data of this study confirm the effect of IL-6 on the formation of the cardiomyopathy in patients with type II diabetes mellitus and requires further in-depth study of this problem.