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AUTOANTIBODIES TO OXIDIZED LDL LEVEL ACCORDING TO INSULIN RESISTANCE IN PATIENTS WITH DIABETES MELLITUS AND CHRONIC CORONARY SYNDROME

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The study of the mechanisms of the pathogenesis of atherosclerosis remains an important problem of modern science. One of the most attractive hypotheses, which has received increasing attention recently, is the autoimmune theory of atherogenesis. Oxidized-modified low-density lipoproteins (oxLDL) is recognized as a key factor in the biological process that initiates and accelerates the development of atherosclerosis. It was found that oxLDL, exhibiting immunogenic properties, induce the formation of specific autoantibodies. However, their clinical significance and atherogenic or atheroprotective role have not yet been clarified [1, p. 1102-1112; 2, p. 22-26; 3, p. 61-67].

Purpose: to evaluate autoantibodies of class G to oxLDL concentration in patients with type 2 diabetes mellitus (DM) who have had non-Q-myocardial infarction (non-Q-MI).

Materials and methods: 49 patients were examined (mean age $61,52 \pm 1,41$ years), among them – 28 patients with chronic coronary syndrome who have had non-Q-MI and suffer from type 2 DM (main group), 10 patients with a history of MI without DM (comparison group I) and 11 patients with type 2 DM without MI in anamnesis (comparison group II). The control group (CG) consisted of 10 apparently healthy individuals, comparable in age and gender. The anti-oxLDL antibodies were measured by enzyme-linked-immunosorbent assay. The significance of the differences in comparing the mean values was determined using the Student's t-test. To detect correlation dependences, the Pearson's correlation coefficient (r) was used.

Results and their discussion:

According to the results of the study, a significant decrease in the serum anti-oxLDL antibodies ($p < 0.01$) level in patients of the main group was revealed compared to the CG. Herewith, the concentration of immunoglobulin (Ig) G to oxLDL was lower in postinfarction diabetic patients ($p < 0.05$) compared with the same patients without DM. At the same time, the content of anti-oxLDL

antibodies in the main group of patients did not differ significantly from the indexes of the II group of comparison.

Analyzing the level of autoantibodies to oxLDL in the comparison groups, a decrease in its concentration was revealed in patients of Group II ($p < 0.001$) with a comparable level in Group I compared with persons in CG. In postinfarction patients without diabetes (Group I) the level of IgG to oxLDL had higher values ($p < 0.01$) compared with patients with isolated diabetes (Group II). So, the results of our study showed that the presence of DM is decisive in the levels of autoantibodies class G to oxLDL.

Taking into account the results obtained, which indirectly indicate the effect of disturbances in carbohydrate metabolism on the concentration of autoantibodies class G to oxLDL, a correlation analysis was carried out in patients of the main group to establish possible relationships between these indexes.

According to the results of the correlation analysis, an inverse correlation was established between the concentration of anti-oxLDL antibodies and the level of insulin ($r = -0.40$, $p < 0.05$) and insulin resistance index HOMA ($r = -0.39$, $p < 0.05$) – Figures 1-2. The data obtained indicate a decrease in the concentration of IgG to oxLDL with an increase in the degree of insulin resistance in patients with type 2 DM who have had non-Q-MI, which explains the dependence of the studied index on the presence of disorders of carbohydrate metabolism.

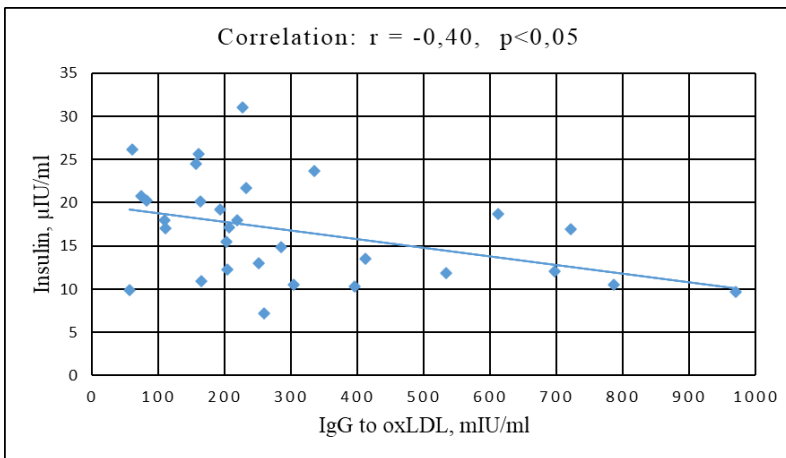


Fig. 1. Dependence of the IgG to oxLDL concentration on the level of insulin in patients of the main group.

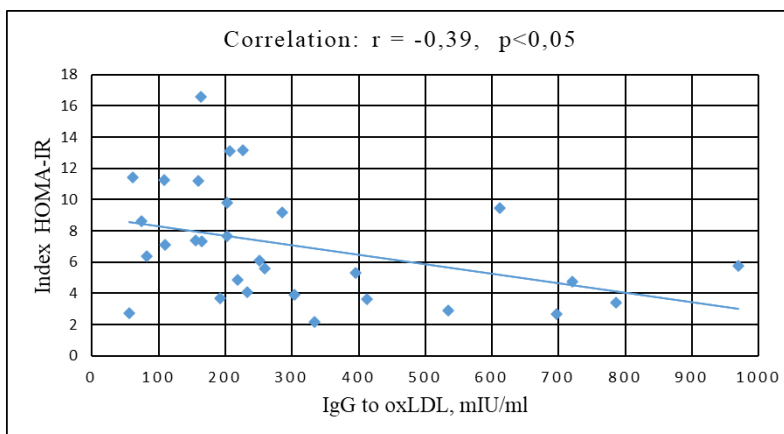


Fig. 2. Dependence of the IgG to oxLDL concentration on the HOMA-IR index in patients of the main group.

Consequently, according to the results of the study, a decrease in the serum level of IgG to oxLDL was revealed in diabetic patients of both the main group and the II group of comparison when compared with persons from the CG and patients of the I group of comparison. At the same time, an inverse correlation of autoantibodies to oxLDL was established with the degree of insulin resistance in patients with type 2 DM who have had non-Q-MI.

Conclusion:

Metabolic disorders associated with DM, such as insulin resistance, decrease titers of class G antibodies to oxLDL which could play an atheroprotective role.

References:

1. Iseme RA., McEvoy M., Kelly B. [et al.] A role of autoantibodies in atherogenesis // *Cardiovasc Res*. 2017. 113 (10). P. 1102-1112.
2. Hartley A., Haskard D., Khamis R. Oxidized LDL and anti-oxidized LDL antibodies in atherosclerosis – Novel insights and future directions in diagnosis and therapy // *Trends Cardiovasc Med*. 2019. Vol. 29 (1). P. 22-26.
3. Cinoku I., Mavragani CP., Tellis CC. [et al.] Autoantibodies to ox-LDL in Sjogren's syndrome: are they atheroprotective? // *Clin Exp Rheumatol*. 2018. Suppl 112 (3). P. 61-67.