Early Markers of Atherosclerosis in Men With Different Levels of Cardiovascular Risk

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Aim: Defining the relationship between early markers of atherosclerosis and the level of total cardiovascular risk (CVR) in a cohort of men.

Materials and methods: The study included 200 men aged 40-55 years with different levels of CVR without clinical manifestations of CVD. The total CVR was defined by the SCORE. Patients were divided into three groups: low and moderate risk <5%, the highest risk 10.5% and very high risk >10%.

State of the intima-media thickness of the carotid arteries and peripheral arteries were determined by duplex scanning (Toshiba Nemio XG, Japan). Diagnostic criteria for peripheral atherosclerosis is ankle brachial index <0.90. Quantitative assessment of coronary calcium was determined using multislice computed tomography (Siemens, Germany).

Results: In patients with low CVR thickening of the intima-media (>1 mm) was found in 58.3% of cases, patients with a high CVR in 57.7% of cases, whereas the pathology of the carotid artery was diagnosed in all patients with a very high CVR. The increase in CVR associated with an increase in the frequency of dysfunction of the peripheral arteries. For example, if a group of low- and moderate-risk ankle-brachial index <0.9 was found in 16.6% of patients, those with high CVR, its frequency increases twice and is 38.4%. In the group of high-risk level and moderate CVR is moderate calcium index (11-100) was observed with the same frequency: 16.6% and 15.4%, respectively. In a group of very high risk, every third patient has moderate calcium index. A high coronary risk was not detected in more than 3% of high CVR (in 3.8% of cases).

Thus, the increase in total CVR associated with increasing thickness of the intima-media and frequency of peripheral atherosclerosis. A similar pattern is detected by a moderate degree of coronary index.

Comparison of the HDL Subclasses, APO A, APO B, CETP Mass and Activity Levels Between the Patients with Coronary Atherosclerosis and Healthy Subjects

Although Having Higher HDL-C Levels

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Plasma lipoprotein profile is one of the major factors to describe the risk of atherosclerotic cardiovascular disease. The exact mechanisms for development and progression of atherosclerosis in subjects with coronary artery disease (CAD) although having high HDL-C levels are still unknown. To reveal the role of HDL subclasses, apolipoproteins and CETP activity and mass levels in the atherosclerotic process is very important for these subjects.

The aim of our study was comparing the levels of HDL subclasses, apolipoproteins, CETP mass and activity between the patients with coronary artery disease by duplex scanning, although having higher HDL-C levels.

Between November 2011 and July 2012 35 patients who have coronary artery disease and HDL-C levels >60 mg/dl, LDL-C levels ≥130 mg/dl, and 35 healthy subjects with the same lipid profile who admitted Gazi University Cardiology Department, enrolled for this study. The CETP mass and activity, apo A1, apo A2, apo B, HDL 2 and HDL 3 levels of the patients and control subjects were measured.

There were no significant differences on apo A2, apo B, HDL 2 and HDL 3 levels between the patients with CAD and control subjects. Apo A1 levels were higher in patients with CAD (mean 588.6±141 mg/dl vs 414±94 mg/dl, p=0.006). Although CETP mass was not different (mean 27.7±16 mg/ml vs 22.2±12 mg/ml, p=0.027), in both groups, CETP activity was significantly higher (mean 1.08±0.33 mg/ml vs 0.89±0.18 mg/ml, p=0.007) in CAD positive group.

In this special study population which contains subjects with or without CAD and have higher HDL-C and LDL-C levels, the findings showed that plasma CETP activity was higher in patients than control subjects whereas HDL-C mass, HDL subclasses, apoB and apo A2 levels were similar in cases versus controls. But unexpectedly and interestingly apo A1 levels were higher in patients with CAD.