Systemic inflammation and anti-connective tissue antibodies in coronary artery disease

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Purpose: the pathogenesis and manifestation of coronary artery disease (CAD) are closely connected with the endothelial dysfunction and atherosclerotic plaque (AP) status. Systemic and local inflammations play a key role in AP formation and its further instability. Inflammatory damage of AP leads to connective tissue components release with consequent immune stimulation. The aim of investigation was to evaluate the pro-inflammatory cytokines levels and serum antibodies against the connective tissue antigens (anti-collagen, anti-hyaluronic acid, anti-chondroitin-sulfate) in CAD pts in comparison with control persons.

Methods: 312 patients with different clinical forms of CAD and 50 persons without clinical, laboratory and instrumental findings of CAD were recruited in this investigation. The levels of CRP, TNF-a, IL-1b, IL-6 and antibodies against collagen (ACA), hyaluronic acid (AHA) and chondroitin-sulfate (ACSA) were measured by ELISA in serum samples.

Results: The CAD pts were similar to the controls with respect to age, gender, associated conditions. The serum levels of CRP, TNF-a, IL-1b, IL-6, ACA, AHA and ACSA were significantly higher in CAD pts than in control group. Elevations of CRP, all from three cytokines and antibodies levels were more prominent in acute coronary syndrome (ACS), especially in ST-segment elevation myocardial infarction. However pts with unstable angina also demonstrated increased serum levels of CRP, determined cytokines and antibodies. TNF-a, IL-1b, IL-6, ACA, AHA and ACSA evaluation in ACS was more informative than C-reactive protein (CRP) and more informative than CRP, troponin I and T tests in unstable angina group.

Conclusions: Obtained data show that pathogenesis of CAD is associated with systemic inflammation and autoimmunity. The early phase of AP instability is accompanied by hypercytokinemia and specific anti-connective tissue antibodies formation, which can take part in progression of the lesion. Assessment of the serum pro-inflammatory cytokines and anti-connective tissue antibodies can be used for early diagnosis of ACS.