Oxidation of HDL in patients with coronary artery disease

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The function of high-density lipoprotein (HDL) cholesterol may play a more important role in the prevention of cardiovascular disease compared to the concentration of the HDL. The aim of the present study is to assess a novel cell-free test to quantify oxidation of HDL and its association to coronary artery disease (CAD).

We performed a prospective trial by including patients undergoing elective cardiac catheterization and healthy controls. A total of 895 subjects were included. In 483 patients CAD was confirmed (CAD group) and in 241 patients CAD was ruled-out (no CAD). Control patients (n=171) had no known CAD, had no diabetes and were not smokers. HDL function was measured in serum samples by determining its HDL-lipid peroxidation by a novel fluorometric cell-free biochemical assay. HDL lipid peroxide content (HDLox) is adjusted for the HDL cholesterol and has no units.

Patients with confirmed CAD had higher levels of HDLox (0.92±0.58, no units) compared to patients with no CAD (0.8±0.46, no units) and controls (0.78±0.41, no units, p=0.003). HDL-Cholesterol was lower in the CAD group (50.7±17.7mg/dl) compared to no CAD (58.4±17.6mg/dl) and healthy subjects (59.1±15.9mg/dl, p<0.001). HDLox was a strong predictor of coronary artery disease status (odds ratio for coronary disease 1.69; 95% confidence interval [CI], 1.24 to 2.38; P=0.001).

Oxidation of HDL, a metric of HDL function, measured by a cell-free biochemical assay, is increased in patients with CAD and is a predictor of the disease.