

CYTOKINES AND LIPOPROTEINS IN HEART FAILURE PATIENTS

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INTRODUCTION: Cytokines such as tumor necrosis factor- α (TNF- α), interleukins and interferons are hormones that, in addition to performing classic immune regulatory functions, also alter a wide array of metabolic processes.

The purpose of the present study was to explore the relationship between lipoprotein concentration and the levels of circulating IL-6, TNF- α in patients with heart failure of different etiologies.

MATERIAL AND METHODS: Ninety-five patients with chronic heart failure (CHF) due to coronary artery disease (CAD, n=50) or non-ischemic etiologies (n=45) were enrolled. Exclusion criteria were active infection, allergy, rheumatoid disease, cancer and severe renal failure (creatinine > 2mg/dl). Treatment with fibrates or statins at baseline was not allowed. Concentrations of TNF- α and IL-6 were measured using enzyme-linked immunosorbent assay (ELISA). Total cholesterol (TC), triglycerides (TG) and HDL-C were measured by enzymatic assays, while LDL was calculated. ApoB and ApoAI were measured turbidimetrically.

RESULTS: Serum concentrations of cytokines were increased significantly according to CHF functional class (FC) severity (II/III/IV): the values for TNF- α (pg/ml) were $11,8 \pm 2,2 / 18,0 \pm 4,0 / 20,8 \pm 4,0$ and for IL-6 (pg/ml) $3,5 \pm 1,3 / 6,3 \pm 0,6 / 10,6 \pm 1,6$. No differences were found in various lipoproteins and lipoprotein indexes between the study groups divided according to etiology or FC severity except in TG and ApoB levels. TG decreased and ApoB increased significantly in IV FC patients. The concordance or discordance of ApoB and various cholesterol indices were investigated. Results indicated a fairly low concordance between ApoB and LDL-C concentrations in CHF patients. Log (TG/HDL-C), called the “Atherogenic Index of Plasma” (AIP), was strongly positively correlated with FERHDL (fractional esterification rate of cholesterol by LCAT in plasma depleted of ApoB containing lipoproteins) and inversely correlated with LDL size in HF patients indicating “false” improvement and reflect significant disturbance of metabolic processes.

CONCLUSION: In patients with CHF, elevated levels of cytokines and disturbed lipoprotein metabolism can be considered as prognostic biochemical indicators of HF severity.

Keyword: Cytokines, Lipoproteins, Heart Failure Patients