Correlation of lipoprotein(a) with parameters of lipid profile and other cardiovascular risk factors in patients with familial combined hyperlipidemia


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Background: According to previous studies, Familial Combined Hyperlipidemia (FCH) is related to metabolic syndrome. However, it is unclear whether the presence of increased Lipoprotein (a) [Lp (a)] modifies the characteristics of metabolic syndrome in patients with FCH. Thus, the aim of our study was to identify and compare the components of metabolic syndrome in patients with FCH according to their Lp (a) levels.

Methods: We enrolled 906 patients (592 males, mean age 49±11 years) who fulfilled the FCH criteria, from the outpatient lipid clinic of our hospital. Venous blood samples were obtained for the determination of plasma glucose and lipid profile [i.e., total cholesterol, triglycerides (TG), low and high-lipoprotein cholesterol, (LDL, HDL)], as well as levels of Lp (a). Moreover, information was obtained regarding demographic characteristics and blood pressure (BP) levels. Diagnosis of hypertension was based on BP levels ≥140/90 mmHg and metabolic syndrome was defined according to ATP III criteria.

Results: In the total population of 906 patients with FCH, 58% (n=524) had metabolic syndrome. We identified a negative correlation between levels of Lp (a) and TG (r=−0.07, p=0.03) and a positive correlation between levels of Lp (a) and HDL (r=0.08, p=0.02). Also, there was a trend towards a negative correlation between levels of Lp (a) and waist circumference (r=−0.6, p=0.06). Moreover, the group of patients with increased Lp (a) levels (≥30 mg/dl, n=289, 32%) compared to those with low Lp (a) levels (<30 mg/dl, n=616, 68%) had hypertension in a greater percentage (44% vs 36%, p=0.02), lower levels of TG (278±146 vs 302±172 mg/dl, p=0.04), higher levels of HDL (42±11 vs 39±9 mg/dl, p=0.01) and increased levels of LDL (193±55 vs 185±53 mg/dl, p=0.05), while there was no difference in glucose levels (104±24 vs 102±20 mg/dl, p=0.18). In multiple logistic regression analysis increased Lp (a) levels were independent determinants of lower triglycerides levels (<150 mg/dl) (OR 0.59, 95% CI 0.36–0.95), after adjustment for confounding factors.

Conclusions: In patients with FCH, increased Lp (a) is related to lower levels of triglycerides, higher levels of HDL, lower waist circumference levels and increased prevalence of hypertension. Thus, it seems that Lp (a) differentiates the expression of metabolic syndrome characteristics in patients with Familial Combined Hyperlipidemia.