

Diabetes Mellitus and Glucose Metabolism

CLINICAL STUDIES IN OBESITY, DIABETES RISK, AND CARDIOVASCULAR OUTCOMES

Features of the Severity of Cardiovascular Remodeling and Metabolic Disorders in Hypertensive Patients with Obesity in the Presence of Two Unfavorable Genotypes of the ADIPOQ and IRS-1 Genes

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The results of a number of studies have shown that in arterial hypertension (AH), G/T and T/T genotypes of the adiponectin gene (ADIPOQ) and Gly/Arg and Arg/Arg genotypes of the insulin receptor substrate 1 gene (IRS-1) are associated with a greater severity of metabolic disorders and hemodynamic parameters compared with G/G and Gly/Gly genotypes of these genes.

The aim of the study: to evaluate the severity of cardiovascular remodeling and metabolic disorders in hypertensive obese patients in the simultaneous presence of two unfavorable genotypes of the ADIPOQ and IRS-1 genes.

Methods: We examined 300 AH patients: 200 patients with AH and obesity, 50 patients with AH and normal body weight, 50 patients with AH and overweight, 40 patients with AH, obesity and type 2 diabetes mellitus (DM2), 30

healthy individuals. The polymorphisms of the ADIPOQ and IRS-1 was assessed by molecular genetic method.

Results: It was found that in all groups of hypertensive patients, regardless of body weight and the presence of DM2, the simultaneous presence of two unfavorable genotypes of the ADIPOQ and IRS-1 genes occurred significantly more often than in healthy individuals: in 41% of AH patients with obesity, 30% of AH patients with normal weight, 40% of AH with overweight, 57.5% of AH with obesity and DM2 vs. 13.3% of healthy individuals. In hypertensive patients, in the presence of overweight and obesity, the frequency of combination of the two unfavorable genotypes of these genes was significantly higher than in AH patients with normal body weight.

Conducting comparative evaluation of AH patients with obesity depending on the presence of two unfavorable genotypes or two protective genotypes of the ADIPOQ and IRS-1 genes showed that carriers of the combination of the G/T + T/T genotype of the ADIPOQ and the Gly/Arg + Arg/Arg genotype of the IRS-1 had a higher body mass index, more pronounced insulin resistance, cardiovascular remodeling, adipokine imbalance, impaired carbohydrate and lipid metabolism.

Conclusions: In AH patients, the frequency of the simultaneous presence of two unfavorable polymorphisms of ADIPOQ and IRS-1 genes was higher than in healthy individuals. In AH patients with overweight and obesity, the frequency of combination of the two unfavorable genotypes of the ADIPOQ and IRS-1 genes was significantly higher than in normal body weight. The presence of a combination of two unfavorable genotypes of the ADIPOQ and IRS-1 genes in patients with AH and obesity was associated with a greater severity of cardiovascular remodeling and metabolic disorders compared with the combination of two protective genotypes of these genes.