

Omentin-1 levels are related with cardiac remodeling in patients with hypertension and type 2 diabetes

Oleksii Korzh, Yana Fylenko, Sergiy Krasnokutskiy

Kharkiv Medical Academy of Postgraduate Education, Department of General Practice-Family Medicine, Kharkiv, Ukraine

Background: Adipose tissue, which is known to be a large endocrine organ, plays a role in the regulation of various biological functions, including the secretion of hormones known as adipokines or adipocytokines. In recent years, adipocytokines have become an important part of the multipotential secretory organ, as well as its role in the biology of various organs in the human body. Understanding the adipobiology of disease can help us become better acquainted with adipocytokines aimed at pharmacology. Omentin-1 is an adipokine preferentially produced by visceral adipose tissue with insulin-sensitizing effects. Its expression is reduced in obesity, insulin resistance and type 2 diabetes (T2D). Omentin-1 has anti-inflammatory, antiatherogenic, anti-cardiovascular disease and antidiabetic properties.

Objective: The purpose of this study was to investigate omentin-1 levels in patients with hypertension and T2D and to determine its relations to heart structural parameters and types of cardiac remodeling.

Methods: We examined 83 patients with hypertension and T2D. Investigation complex included physical examination, standard transthoracic echocardiography and determination of omentin-1 serum levels by ELISA. Control group consisted of 23 volunteers.

Results: The omentin-1 levels in patients were significantly lower than those in volunteers ($p < 0.001$). Negative correlation relations of omentin-1 with septal wall thickness ($r = -0.50$, $p < 0.001$), posterior wall thickness ($r = -0.46$, $p < 0.001$), left ventricle (LV) mass ($r = -0.39$, $p < 0.01$), LV mass index ($r = -0.42$, $p < 0.001$) and left atrium size ($r = -0.45$, $p < 0.001$) were found.

Patients with concentric LV hypertrophy had significantly lower omentin-1 levels than patients with concentric remodeling of LV ($p < 0.05$). A multivariate analysis included demographic and anthropometric variables, alcohol intake and smoking habit, duration of diabetes, use of antihypertensive drugs, renal function and plasma lipid levels, HOMA index and CRP indicated that omentin-1 levels are independently related with LDL cholesterol ($\beta = -0.164$, $P < 0.05$), HOMA index ($\beta = -0.236$, $P < 0.001$), and CRP ($\beta = -0.278$, $P < 0.001$).

Conclusion: Patients with hypertension and T2D have significant reduction of omentin-1 blood levels, which is accompanied by cardiac remodeling development primarily concentric LV hypertrophy and have negative correlation relations of omentin-1 with heart structural parameters that characterize LV remodeling and left atrium size.

