The effect of high plasma nesfatin-1 level on metabolic risk factors in hypertensive patients

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Background:
Estimation of total cardiovascular risk is based on blood pressure level, risk factors and presence of organ damage. The link between such factors as hypertension, obesity, hypercholesterolemia, insulin resistance exists at the level of pathogenetic mechanisms. Nesfatin-1 was discovered as anorectic peptide secreted by hypothalamus, adipose tissue and other organs. Currently, its possible role in the development of concomitant diseases and the possibility of its use for therapeutic purposes are being studied.

Purpose:
To investigate the association between the highest plasma nesfatin-1 levels and metabolic parameters in hypertensive patients.

Methods:
106 patients with essential hypertension were examined. Anthropometric data were obtained. Fasting and postprandial glucose levels were determined by the glucose oxidase method. Insulin (mkIE/ml) and nesfatin-1 (ng/ml) levels were determined by enzyme immunoassay method. Total cholesterol, triglycerides, high-density lipoprotein cholesterol (HDLc) and low-density lipoprotein cholesterol were measured.  The atherogenic coefficient was obtained as non-HDLc/HDLc. Nesfatin-1 levels were divided into quartiles, and these 4 groups (Q1-4) were used for comparing of results using the Mann-Whitney test, ANOVA rank Kruskal-Wallis test, the median test. Spearman's rank correlation coefficient was used for estimation of the relationship between two variables.

Results:
The range of nesfatin-1 distribution was from 4.88 to 9.71 ng/ml. Patients of Q4 ( ≥ 8.44 ng/ml) were characterized by lower body mass index (p=0.01), hips circumference (p=0.002), lower levels of postprandial glucose (p=0.03), HDLc (p=0.01) and higher levels of triglyceride (p=0.02).

Application of Spearman’s rank correlation coefficient to Q4 parameters showed negative correlation of nesfatin-1 with weight (r= -0.356, p<0.01), body mass index (r= -0.514, p<0.001), waist circumference (r= -0.451, p<0.001), hips circumference (r= -0.471, p<0.001), levels of fasting glucose (r= -0.289, p<0.05), postprandial glucose (r= -0.468, p<0.05), and positive correlation of nesfatin-1 with atherogenic coefficient (r= 0.288, p<0.05).

Conclusions:
Higher nesfatin-1 levels in hypertensive patients were accompanied by lower anthropometric and glycemic parameters and increased atherogenic risk. These data may have important value for early diagnostics and treatment of patients in order to reduce cardiovascular risk.