

Role of obesity in ischemic stroke- investigation of adipokines: Leptin, adiponectine and gastrointestinal hormone ghrelin in stroke

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Introduction: Obesity, an excess of body fat, is very often associated with metabolic dysfunction of an human organism. We targeted implications of adipocytokines in ischemic stroke patients with respect to components of metabolic syndrome

Methods: 145 patients (male and female) with acute ischemic stroke were enrolled for the study. The mean age of stroke patients was 66.7 ± 12.1 . During the same period 68 controls, free of acute cerebrovascular disease and matched for age and sex, were recruited. The mean age of control group was 63.06 ± 11.2 . Obesity measures (body mass index and waist circumference) and other components of metabolic syndrome (glycaemia, cholesterol, HDL and LDL cholesterol, triglycerides, presence of arterial hypertension) were investigated. Leptin concentrations were tested in 145 patients with ischemic stroke (80 males and 65 females) and 61 controls. Ghrelin levels were obtained from 113 stroke patients (68 males and 45 females) and 45 controls. Adiponectin levels were measured in 140 stroke patients (72 males and 68 females) and 67 controls.

Results: Significantly higher levels of leptin and lower levels of adiponectin and ghrelin were confirmed in the stroke group. The level of leptin in women with stroke was three-times higher than in men, and the leptin levels positively correlated with obesity in both sexes. Positive relationship was not found between leptin, arterial hypertension and glycaemia levels in our study. Adiponectin levels were not different between men and women with acute stroke. Stroke patients in our group had hypoadiponectinemia but we did not confirm any associations with other metabolic risk factors. In our study we have found decreased levels of ghrelin in the stroke group compared to the controls but ghrelin levels didn't correlated strongly with obesity markers. We found trend to correlation of ghrelin level and waist circumference in stroke women. Ghrelin levels correlated mildly with triglyceride levels in stroke group.

Conclusions: Adipokines are supposed to play a specific role in the process of atherogenesis and in inflammatory processes generally. Bivalent activity of leptin and adiponectin is normally balanced, resulting in a healthy and steady state. Accumulation of leptin levels, started to be dangerous in situation of inadequate metabolic compensation and in impaired defensive role of adiponectin. Our results confirmed differences of leptin and adiponectin levels between the stroke and the control groups. We have found significantly higher levels of leptin and lower levels of adiponectin in stroke patients. Leptin levels correlated strongly with obesity in men and women. Ghrelin's function in pathogenesis of stroke is not fully known. Extra-endocrine functions of ghrelin should play an important role in vascular pathology. Central effects of ghrelin are similar to cannabinoids. Ghrelin levels are high during fasting and with low BMI. Ghrelin suppresses production of proinflammatory cytokines and improves proinflammatory milieu by inhibiting T lymphocytes and monocytes. Ghrelin demonstrates potent vasodilator properties based on increased endothelial nitric oxide expression, that is endothelium and growth hormone independent.

Biography

Ema Kantorova's specialization is neurology, she finished PhD study last year (2011) and now she is a teacher, an assistant professor and postdoctoral fellow of the Jessenius Faculty of Medicine Comenius University in Martin. She studied medicine in Faculty of Medicine in Palacky University, Czech Republic. She live and work in Slovakia, Martin.

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