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Features of expression and concentration of adiponectin in adipocytes of adipose tissue of different localization in patients with ischemic heart disease

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Background. Today, obesity is still a serious medical, social and economic problem throughout the world. Among adipokines, adiponectin, which regulates energy homeostasis, influences the metabolism of free fatty acids (FFA) and carbohydrates, which has anti-inflammatory and anti-atherogenic effects, is of particular interest. Adiponectin is synthesized not only by adipocytes, but also by myocytes, including cardiomyocytes.

Purpose: to study the specificity of expression and content of adiponectin in adipocyte culture of subcutaneous, epicardial and perivascular adipose tissue and the influence of various doses of rosvastatin on these processes.

Methods. Examined 29 patients with ischemic heart disease. Adipocytes were isolated from the samples of subcutaneous (SAT), epicardial (EAT) and perivascular (PVAT) adipose tissue, and which were taken during coronary artery bypass surgery, followed by cultivation in the presence of rosvastatin and evaluation of gene expression and adiponectin concentration. All study was carried out in compliance with the Helsinki Declaration, and its protocol was approved by the Ethical Committee of Research Institute. Statistical analysis was performed using Statistica 9.0. All patients gave written informed consent to participate in the study.

Results. Adipocytes SAT, EAT and PVAT differed in the level of adiponectin secretion and expression of its gene. On the first day of cultivation the expression of the adiponectin gene in the EAT was 2.3 times lower than in the PVAT. On the 2nd day of cultivation the expression of the adiponectin gene was reduced both in the EAT and the PVAT as compared to the SAT. When rosvastatin was added at a concentration of 1 µmol/l, adiponectin gene expression in PVAT was higher than when rosvastatin was added at a concentration of 5 µmol/l, in the adipocyte culture of SAT effect was opposite

Conclusion. Adipocytes SAT, EAT and PVAT differ in the level of adiponectin secretion and expression of its gene. Rosuvastatin has a multidirectional effect on various fat depots: it reduces expression levels in SAT and increases in PVAT, and low doses of rosuvastatin cause a more pronounced increase in the expression level of the adiponectin gene in PVAT.