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Tissue-specific expression of heat shock proteins in patients with obesity

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Introduction: Abdominal obesity and type 2 diabetes mellitus (T2DM) occupy one of the leading positions among the factors contributing to the reduction of working capacity, disability and mortality. The system of heat shock proteins (HSP) is a universal and powerful mechanism for protecting cells from damage of various origins. The aim of this work was to identify the features of the expression of heat shock proteins (HSP70) in obese patients.

Methodology: The material for the study was biopsies of the liver, adipose tissue (omentum, mesentery, subcutaneous adipose tissue) and peripheral blood mononuclear cells. The study included 54 participants. The study group consisted of 26 obese patients with T2DM, 11 patients without carbohydrate metabolism disorders and comparison group of 17 donors without changing the parameters of carbohydrate and fat metabolism. To determine the levels of gene expression, the method was RT-PCR using qPCRmix-HS SYBR reagents (Eurogen). The morphological and functional state of the liver was diagnosed by histological method.

Findings: The indicators of carbohydrate metabolism in patients with T2DM were increased, relative to patients without T2DM and a comparison group. Histological analysis revealed changes in the violation of lipid metabolism in the liver, despite the absence of clinically significant changes. In obese patients in all groups were diagnosed with non-alcoholic fatty liver disease. Scientists suggest that the induction of heat shock proteins protects against insulin resistance against obesity, but the basic mechanisms are still not understood. The level of HSP70 expression in all types of adipose tissue and liver biopsy samples turned out to be not statistically significant, while in patients with peripheral blood mononuclear cells a significant increase of 80 times was recorded.

Conclusion: Thus, in the future we plan to increase the patient sample, evaluate the production of this protein in the studied tissues, which will reveal the role of HSP70 in obese patients.

Biography

Maria Vulf, PhD is a researcher at the Center for Immunology and Cellular Biotechnology, Immanuel Kant Baltic Federal University, Kaliningrad. She has published about 20 papers in reputed journals.

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