Galina V Semikova et al., J Community Med Health Educ 2017, 7:1 (Suppl)
http://dx.doi.org/10.4172/2161-0711.C1.025

EFFECTS OF BARIATRIC SURGERY ON MYOCARDIAL RESISTANCE TO ISCHEMIA AND REPERFUSION INJURY IN THE EXPERIMENT

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Statement of the Problem: Obesity, metabolic syndrome and diabetes mellitus type 2 are the most common pathological states in the world. Although bariatric surgery is widely used to reduce the adverse effects, caused by these states, its effects on cardiovascular system remain in question. To solve this problem, studies in animals are needed to evaluate the effects of various bariatric procedures on hemodynamic in normal and pathological states. The aim of this study is to compare in experiments on rats the impact of various bariatric procedures on myocardial resistance to ischemia and reperfusion injury.

Methodology & Theoretical Orientation: The rats were subjected to the surgeries for proximal stomach resection, ileal interposition and laparotomy. 5-6 Months after the surgeries, isolated hearts of the animals were perfused by Crebs-Henseleit solution in vitro according to Langendorff. Coronary flow, systolic and diastolic blood pressure, heart rate and contractile function were measured before ischemia period and during perfusion period. To identify areas of necrosis following ischemia, the hearts were incubated with 2,3,5-triphenyltetrazolium chloride. The necrosis area was evaluated on digital photographs by manually contouring the differentially colored left ventricle subsets.

Findings: 5-6 Months after the surgeries, the proximal gastrectomy, but not the ileal interposition, contributed to the increase of necrosis area in the heart after ischemia. Specific changes in the dynamics of coronary flow, systolic and diastolic blood pressure, heart rate and contractile function during perfusion period were observed after the proximal stomach resection and the ileal interposition.

Conclusion & Significance: In normal conditions, the effects of bariatric procedures on myocardial resistance to ischemia and reperfusion injury depend on the type of surgery. The data obtained are important to assess the impact of different bariatric procedures on cardiovascular system and to develop the effective surgical approaches for the treatment of Type II diabetes in patients with heart disease.

Biography

Galina Semikova graduated in 2015 from the First Pavlov State Medical University of Saint Petersburg, Russia, with the specialization in endocrinology. Area of interests is metabolic syndrome, obesity, cardiovascular diseases, cardioprotection, system of incretins, bariatric surgery. She actively uses as pathological conditions experimental approaches to ischemia and reperfusion on *in vivo* and *ex vivo* models, on the isolated heart and has experience in the evaluation of cardioprotective effects of gastrointestinal peptides. In addition, in the course of training in the Laboratory of Nutrition Physiology in Pavlov Institute of Physiology, RAS, she got experience in the use of the method for assessing intestinal glucose absorption ability *in vivo* (in the absence of anesthesia and surgical trauma).

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