

2nd World Congress on

Public Health & Nutrition

March 22-23, 2017 | Rome, Italy

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

Galina V Semikova^a, Elena E Davydova^a, Lucas G Carelli^a, Oxana Tkachuk^a, Oleg V Korniyushin^b, Alexander E Neumark^b, Iana G Toropova^b and Alexander S Polozov^c

^aFirst Pavlov State Medical University of Saint Petersburg, Russia

^bFederal Almazov North-West Medical Research Centre, Russia

^cPavlov Institute of Physiology- RAS, Russia

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 effect on cardiovascular system is still not known. To solve this problem, studies on 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 conduct experiments on rats and to compare the impact of various bariatric procedures on myocardial resistance to ischemia and reperfusion injury.

Methodology & Theoretical Orientation: The rats were subjected to surgeries for proximal stomach resection, ileal interposition and laparotomy. 5-6 months after the surgeries, isolated hearts of the animals were perfused by Krebs-Henseleit solution in vitro according to Langendorff heart. 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.