Glucose metabolism regulation in morbidly obese patients and in patients after biliopancreatic diversion

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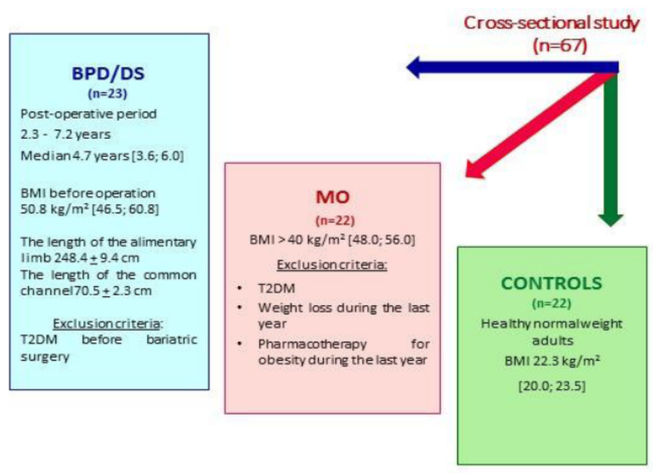
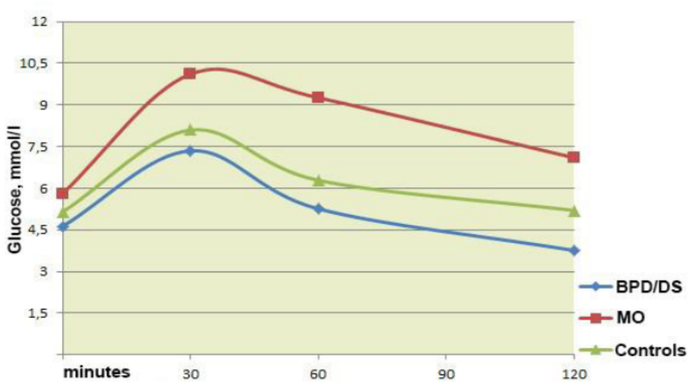
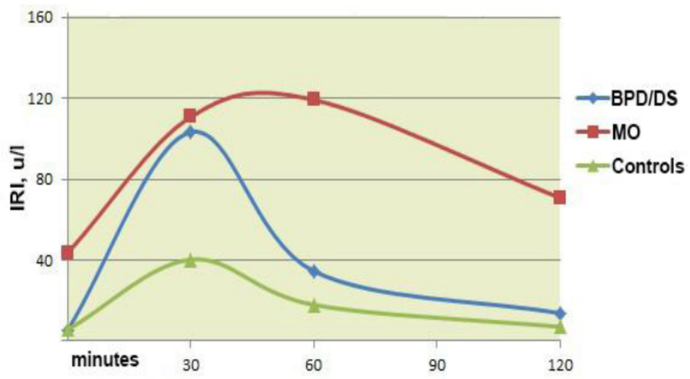
Introduction: Morbid obesity (MO) is associated with high frequency of type 2 diabetes mellitus (T2DM). Biliopancreatic diversion (BPD) is bariatric operation that results in rapid T2DM remission and increased GLP-1 levels. The aim of the study was to compare non-diabetic MO patients with normal weight controls and with patients who underwent BPD more than 2 years ago.

Methods: Blood glucose levels, IRI, GLP-1, GIP and glucagon were measured during the oral glucose tolerance test (OGTT) in three groups of patients. Patients of the 1st group (MO) had BMI> 40 (n = 22) and no history of diabetes mellitus. Patients after BPD were included in the 2nd group (n = 23), post operative period median was 4.7 years (2.3-7.2). The 3rd group were normal weight controls (n = 22).

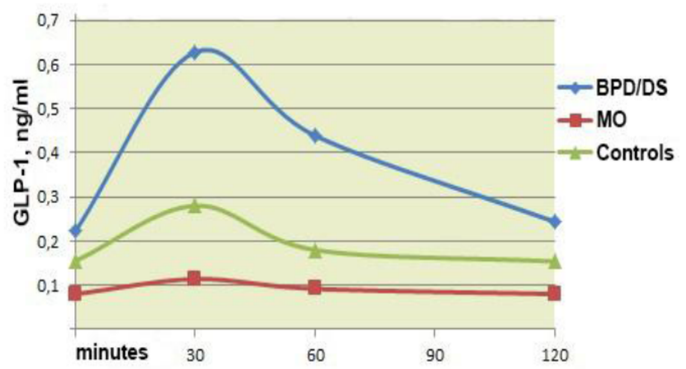




Blood glucose during OGTT

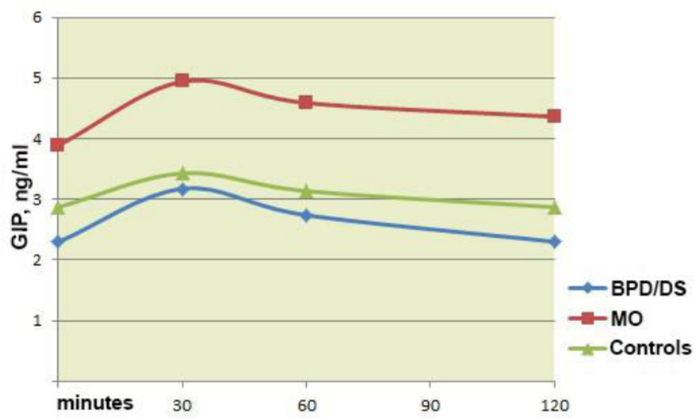


Insulin levels during OGTT



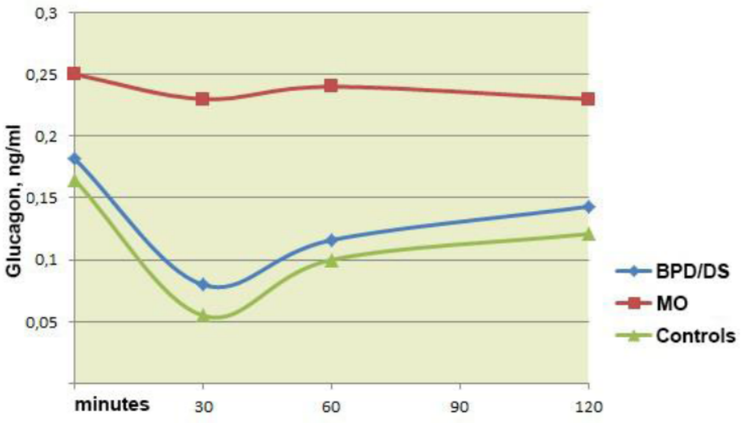
GLP-1 levels during OGTT

Results: Impaired glucose metabolism was revealed in 68.2% of MO patients (n=10).In MO group fasting glucose, IRI and HOMA-IR were maximal (p<0.001). MO patients had higher fasting and stimulated GIP and glucagon levels. In the BPD patients postprandial glucose (120 min) was lower, in 17.4% we found postprandial hypoglycemia (<2.8 mmol\l). Stimulated IRI concentration was significantly higher in the BPD group (p = 0.026). Fasting and stimulated GLP-1 were significantly higher in BPD (p= 0.037 and p=0.022 respectively).



GIP levels during OGTT

Conclusion: Hyperglucagonemia, increased GIP levels and decreased GLP-1 levels are observed in MO. Glucose intolerance and insulin resistance incidence is higher in MO patients. Stimulated plasma IRI and GLP concentrations are significantly increased in BPD patients.



Glucagon levels during OGTT

1. **Conflict of interests:** None disclosed

2. **Funding:** This study was supported by the Russian Foundation for Basic Research (grant № 11-04-00946)