

Increased Urocortin 3 blood levels in morbidly obese subjects are reduced after excess body weight reduction with laparoscopic sleeve gastrectomy

Alexandra Bargiota¹, Dimitris Papamargaritis¹, Eleni Sioka², Dimitris Zacharoulis², George Tzovaras² and George N. Koukoulis¹

¹Department of Endocrinology and Metabolic Diseases, University of Thessaly, Larissa, Greece

²Department of Surgery, University Hospital of Larissa, Greece

OBJECTIVES

To measure Urocortin3 (Ucn3) blood levels in morbidly obese (MO) non diabetic patients before and after laparoscopic sleeve gastrectomy (LSG) for excess body weight reduction and explore its relationship with b-cell function. Ucn3 is involved in insulin secretion in the presence of nutrient excess, a key feature of obesity, and may be an integral part of the compensation of β -cells function.

METHODS

- We studied:
 - 9 MO patients who underwent LSG
 - 11 healthy non-obese subjects (HS)
- In both groups, we measured preoperatively and 6 months postoperatively:
- a 2-hour, 75 g oral glucose tolerance test (OGTT)
 - blood samples were withdrawn at 0, 30, 60, 90 and 120 minutes for glucose, insulin, lipid levels measurements
 - Ucn3 levels at 0 and 60 minutes
- To assess insulin sensitivity and beta-cell function were calculated HOMAR, Matsuda index, insulinogenic index and disposition index

RESULTS

- ✓ In MO, six months after the operation, mean **BMI and waist circumference decreased significantly** (from **44.7 to 30.5 Kg/m²** and **130.8 to 99.2 cm**, respectively)
- ✓ **Blood Ucn3 levels in MO decreased significantly 6 months after LSG** (24.45±9.42 vs 3.66±2.71 pg/dl, **p=0.001**), down to levels similar to HS
- ✓ **Body weight reduction** was followed by **significant decline** of fasting serum glucose and insulin levels (94.9±10.3 to 82.9±4.9, **p=0.013** and 25.6±16.4 to 6.5 ±2.4, **p=0.001**) and their areas under the curve (17.288±3.625 to 13.588±2.965 **p=0.048** and 12.947±5.176 to 6.714±3.039, **p=0.001**, respectively)
- ✓ Insulin sensitivity increased significantly (**p=0.001**), but first phase insulin release and b-cell function remained unchanged
- ✓ Measurements of indices of insulin sensitivity:

Parameter	Control		Obese Preoperation		Obese Postoperation	
HOMAR	1.27	0.75	6.19	4.64	1.34	0.50
Matsuda	9.3±3.5		2.04±0.94		6.14±1.48	
Insulinogenic index	0.86±0.69		1.56±1.41		1.23±0.98	
- ✓ **Ucn3 concentrations were positively associated** with insulin, BMI, HOMAR and triglycerides levels
- ✓ However, in multiple regression analysis BMI was the only predictor

CONCLUSIONS

- Blood Ucn3 levels are significantly higher in obese non-diabetic subjects with hyperinsulinemia and insulin resistance.
- Reduction of excess body weight is followed by a parallel decrease of insulin and Ucn3 blood levels.

References

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