

Copeptin, a marker of vasopressin, decreases significantly in early state after bariatric surgery

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OBJECTIVES

Copeptin, the C-terminal fragment of arginine vasopressin pro-hormone, has been associated with the metabolic syndrome (MetS), diabetes mellitus (DM) development [1,2]. Bariatric surgery is the method proven to cause significant weight loss in morbid obesity treatment. Hormonal changes in addition to weight loss with restrictive and/or malabsorptive methods contribute to regression of metabolic syndrome. Although decreased ghrelin level, increased peptide Y level, increased glucagon like peptide-1 (GLP-1) and cholecystokinin level after obesity surgery are known [3,4] no previous study has evaluated its effect on copeptin levels.

The aim of our study is to evaluate preoperative and postoperative alterations of copeptin in patients who underwent obesity surgery and evaluate any differences between sleeve gastrectomy (SG) and mini gastric bypass (MGB) in terms of copeptin levels.

METHODS

Twenty five consecutive patients, who were treated for morbid obesity by SG or MGB, between March and April 2015 were included in this study. Diagnosis of MetS was made according to NCEP ATP-III criteria. Blood samples were obtained from patients preoperatively and one month after operation. ELISA technique was used to measure copeptin level in plasma samples.

RESULTS

SG and MGB were applied to 11 and 14 patients, respectively. Mean ages (35 ± 8.3 vs. 34.7 ± 7.7 , $p=0.908$) and body mass indexes of the two groups were similar (44.3 ± 2.3 vs 44.2 ± 3.2 , $p=0.948$). Mean preoperative copeptin levels of patients who had SG ($0,715 \pm 0,619$ ng/ml) and MGB ($0,577 \pm 0,222$ ng/ml) were similar ($p= 0.003$). At postoperative 1st month mean weight loss of the patients was 12.4 kg. Postoperative copeptin levels were statistically significantly decreased in both groups compared with preoperative levels (SG; $0,628 \pm 0,610$ ng/ml, $p=0,03$, MGB; $0,474 \pm 0,180$ ng/ml, $p=0,01$). Decrease in copeptin level was higher in mini gastric bypass group than sleeve gastrectomy group but this didn't reach statistical significance (Table 1).

Table 1. Pre and postoperative copeptin levels according to type of the operation.

	Preop Copeptin (ng/ml)	Postop Copeptin (ng/ml)	p value
Sleeve gastrectomy, n=11	0,715±0,619	0,628±0,610	0.003
Mini gastric bypass, n=14	0,577±0,222	0,474±0,180	0.001
p value	0.446	0.377	

CONCLUSIONS

Recent studies have demonstrated the association between copeptin level and DM and MetS. Our study is the first one to show that copeptin significantly decrease during early postoperative period after obesity surgery. Decrease in copeptin level achieved by bariatric surgery may be one of the reasons of glycemic regulation and improvement in MetS parameters before achievement of target weight in these patients. Encouraging results we achieved with limited number of patients may form a basis for studies that will show progression of copeptin levels in patients who had bariatric surgery with larger samples and longer follow up periods.

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