Effect of gastric bypass and gastric banding on proneurotensin levels in morbidly obese patients

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CONTEXT: Neurotensin is produced mainly in the N cells of the ileum and has a role in appetite regulation; levels are decreased in obese subjects and increase after bariatric surgery. Mature neurotensin is very unstable, with a short half-life. OBJECTIVE: The objective of this study was to compare baseline and postoperative levels of the more stable neurotensin precursor, proneurotensin/neuromedin (pro-NT/NMN), in patients after gastric banding, gastric bypass, and nonoperated controls, respectively, during long-term follow-up. DESIGN AND SETTING: This was a prospective observational study in a university hospital. PARTICIPANTS AND MAIN OUTCOME MEASURES: Overnight fasting plasma pro-NT/NMN concentrations were measured with a new sandwich immunoassay in morbidly obese subjects at baseline and 6, 12, and 24 months after gastric banding (n = 8), Roux-en-Y gastric bypass (n = 5), and in nonoperated controls (n = 7). RESULTS: After gastric bypass and banding, body weight decreased by (mean +/- sd) 29.5 +/- 5.5 and 22.8 +/- 5.9 kg, respectively. The decrease after 3 and 6 months was more pronounced after gastric bypass compared with gastric banding (P < 0.05). Plasma pro-NT/NMN levels in patients after gastric bypass increased from 246.3 +/- 174.3 pmol/liter on admission to 748.3 +/- 429.6 pmol/liter after 24 months (P < 0.01). In contrast, in patients with gastric banding, pro-NT/NMN concentrations remained stable (207.3 +/- 60.5 pmol/liter at admission, 226.6 +/- 116.8 pmol/liter after 24 months). Neither body weight nor plasma pro-NT/NMN levels changed in nonoperated controls. CONCLUSION: Plasma pro-NT/NMN levels show a more pronounced increase after gastric bypass compared with gastric banding, suggesting that specific bariatric surgical procedures result in distinct alterations of gastrointestinal hormone metabolism. The more stable precursor pro-NT/NMN provides a new tool to quantify neurotensin levels in clinical practice.

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