CLINICAL CAPSULES

Gastric Bypass Alters Gut Hormones

Gastric bypass surgery, unlike gastric banding, alters gut hormones that favor satiety and long-term changes in body weight.

Formerly obese patients who had undergone Roux-en-Y gastric bypass had increased levels of peptide YY (PYY) and glucagon-like peptide 1 (GLP-1) and exaggerated insulin responses immediately following a meal. "None of these effects were observed in patients losing similar amounts of weight through gastric banding, suggesting that the hormonal changes are not secondary to weight loss alone," said Dr. Carel W. le Roux, of Imperial College London, and colleagues (Ann. Surg. 2006;243:108-14).

Released postprandially from the distal gastrointestinal tract, PYY inhibits the release of a neuropeptide that stimulates food intake. GLP-1 promotes postprandial insulin release and improves pancreatic β-cell function. GLP-1 has also been reported to inhibit food intake in humans.

The researchers compared plasma levels of PYY, GLP-1, and ghrelin after a 420-kcal meal in 15 lean control subjects, 12 obese control subjects, 6 patients who had undergone Roux-en-Y gastric bypass, and 6 patients who had undergone gastric banding. The surgery patients underwent the procedures 6-36 months prior to the measures.

Roux-en-Y bypass patients had an exaggerated GLP-1 response at 30 minutes—230% of the baseline value. In contrast, normal controls, obese controls, and gastric banding patients had GLP-1 responses at 30 minutes of 66%, 22%, and 50% above baseline.

Likewise, Roux-en-Y bypass patients had an exaggerated PYY response at 90 minutes—162% of baseline. Normal controls, obese controls, and gastric banding patients had PYY responses at 90 minutes of 49%, 14%, and 22% above baseline.

"The higher postprandial PYY response after gastric bypass surgery … may contribute to the patients' increased satiety and weight loss." Increased GLP-1 might contribute to immediate improvements in glycemic control.

Obese subjects had a lower fasting ghrelin level (446 pmol/L), compared with lean subjects (700 pmol/L). There were no differences in the fasting ghrelin levels among the obese and surgically-treated groups. Ghrelin stimulates food intake.

Albuminuria, Central Fat in Diabetes

Microalbuminuria and macroalbuminuria appear to occur more often in men with type 1 diabetes than in women with the disease because men have more visceral fat, according to findings from a cross-sectional follow-up study.

Further studies will be necessary to determine the cause of the association between male gender and increased albumin excretion rate (AER), because central obesity itself may not cause the increased excretion, reported Dr. Shalamar D. Sibley of the University of Minnesota, Minneapolis, and associates (Am. J. Kidney Dis. 2006;47:223-32).

The study involved 1,185 patients with type 1 diabetes who participated in the Epidemiology of Diabetes Interventions and Complications trial. After 4 years of follow-up, 217 patients developed an elevated AER: 163 had microalbuminuria and 54 had macroalbuminuria.

Waist-to-hip ratio was significantly and independently associated with elevated AER in men, but not in women, after adjusting for age, HbA_{1c} level, smoking status, duration of diabetes, and systolic blood pressure.

Hyperparathyroidism Impairs Respiration

Researchers in Turkey have reported greatly improved respiratory measures after surgical removal of parathyroid adenomas or subtotal parathyroid excision in patients with hyperparathyroidism.

Investigators with the Istanbul Medical Faculty measured forced vital capacity (FVC) and forced expiratory volume in 1 second (FEV_1) before surgery and 6 months after surgery in 15 patients with symptomatic hyperparathyroidism. A group of 10 euthyroid patients with multinodal goiter undergoing near total thyroidectomy served as controls.

Dr. Yasemin Giles and colleagues found that preoperative FVC values were below reference values in 11 of 15 patients (73%) and FEV_1 values were below reference values in 9 of the 15 patients (60%) with hyperparathyroidism (Arch. Surg. 2005;140:1167-71).

Respiratory function was normal before and after surgery in controls. Patients with symptomatic hyperparathyroidism did not have dyspnea before surgery, but all reported fatigue, weakness, and exhaustion with minimal effort.

Improvement in respiratory function was "found to have a linear correlation with preoperative total serum calcium," the investigators wrote.

Surgery resulted in normalization of serum calcium in all patients. Symptomatic disease is linked to hypercalcemia, they noted.

—From staff reports