

reduced in the obese subjects with parasympathetic dysfunction. In NIDD the early increase in HR was normal; the later increase in HR and the blood pressure response were reduced in NIDD with parasympathetic dysfunction. This study suggests that i) in obese subjects, sympathetic activity is reduced, vagal hypertony, which might participate in hyperinsulinemia, would be replaced later by a vagal dysfunction; ii) in NIDD sympathetic activity is reduced only in the patients with vagal dysfunction; iii) obesity per se might be involved in vagosympathetic changes in NIDD.

**Alterations in vagosympathetic control and glucose-induced thermogenesis in obese patients.** B Lormeau, G Karam, P Miossec, J Pariès, S Idriss, JR Attali, P Valensi (*Department of Endocrinology-Diabetology-Nutrition, Jean-Verdier Hospital, Paris-Nord University, Bondy, France*)

Alterations in vagosympathetic control have been reported in animal models of obesity and obese patients. The aim of this study was to investigate the link between these alterations and glucose-induced thermogenesis (GIT) in non-diabetic subjects referred to our department for obesity. Thirty-three subjects were included. GIT was studied by continuous measurements by indirect calorimetry (Deltatrac Monitor) in the hour before and the 3 h after the oral consumption of a 75 g dose of glucose. O<sub>2</sub> consumption and CO<sub>2</sub> production were continuously monitored. Glucose and lipid oxidation rates were calculated from the respiratory quotient. Five standardized tests, three studying parasympathetic control (deep-breathing, lying-to-standing and Valsalva) and two depending on sympathetic activity (postural hypotension, blood pressure response to a handgrip test) were performed. Fat free mass was measured by impedancemetry method. The five standardized tests were normal in ten patients

(group 1), whereas in the 23 other patients (group 2), one or several parasympathetic tests were altered (18 cases) or both parasympathetic and sympathetic tests were abnormal (five cases). Age, sex ratio, body mass index (BMI) and fat free mass did not differ between the two groups. During the oral glucose test, none of the patients met the criteria for diabetes mellitus. The plasma glucose response was very similar in both groups. The insulin response was also very similar. GIT was not significantly different. In the basal state before glucose ingestion, compared with group 1, group 2 had a lower respiratory quotient ( $0.83 \pm 0.03$  vs  $0.88 \pm 0.02$ ,  $P < 0.0001$ ), lower glucose oxidation ( $1.34 \pm 0.56$  vs  $1.92 \pm 0.32$  mg/kg/min,  $P = 0.004$ ) and a higher lipid oxidation ( $0.54 \pm 0.14$  vs  $0.32 \pm 0.16$  mg/kg/min,  $P = 0.001$ ). During the 3 h following glucose ingestion, the calculated cumulative oxidation of glucose was higher ( $P = 0.05$ ), the cumulative oxidation of lipids was lower in group 2 ( $P < 0.02$ ) than in group 1 and GIT was not significantly different. The increase in plasma noradrenalin was lower in group 2, the difference being only significant at 90 min ( $1.75 \pm 0.70$  vs  $2.18 \pm 0.60$  nmol/L,  $P = 0.05$ ). The changes in blood glucose, plasma insulin and adrenalin levels were very similar in the two groups. These results suggest that vagal dysfunction was associated with a change in substrate oxidation. The higher basal lipid oxidation in the patients with vagal dysfunction may be due to a relative increase in sympathetic tone. The lower increase in plasma noradrenalin, which suggested a lower sympathetic activation after glucose ingestion, might account for the stronger reduction in lipid oxidation.

**Preliminary results of treatment of severe obesity by adjustable silicone gastric banding (ASGB).** P Lecomte, JP Marmuse, G Benhamou (*Department of General Surgery, hôpital Bichat-Claude-Bernard, 46,*

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Currently, vertical banded gastroplasty (VBG) is the most frequently used gastric restrictive procedure for surgical treatment of severe obesity. The VBG procedure offers good results with minimum morbidity, but has two side effects: risk of staple line disruption (5–6%), and solid food intolerance due to stoma stenosis (15–20%). The adjustable silicone gastric banding (ASGB) is also a gastric restrictive technique and in addition it permits the percutaneous adjustment of the size of the stoma by inflating or deflating the inflatable portion of the band via an injection reservoir placed within the rectus sheath.

From November 1993 to October 1994, ten patients underwent ASGB for severe obesity. There were six females and four males. Mean age was 39 years (range 20–47 years). Preoperative body weight was 135 kg (range 115–176 kg) and body mass index (BMI) was 48.2 kg/m<sup>2</sup> (range 40–59 kg/m<sup>2</sup>). Obesity associated comorbidities included hypertension ( $n = 6$ ), diabetes ( $n = 4$ ), hyperlipidemia ( $n = 4$ ), severe dyspnea ( $n = 9$ ), joint disorder ( $n = 3$ ) and severe psychosocial impairment ( $n = 2$ ). Three patients had conversion ASGB after VBG for total food intolerance.

The mean hospital stay was  $15.5 \pm 2.5$  days. Early postoperative complications included evisceration (one patient), and abscess of the abdominal wall (one patient). No one had a thromboembolism. Apart from adjustments of stoma size percutaneously via the injection reservoir under local anesthesia, no revisional procedures were needed for persistent vomiting or food intolerance. At a mean follow-up of 12 months (range 6–18 months), mean body weight was 96.2 kg (range 75–125 kg;  $P < 0.004$ ), and BMI was 33.5 kg/m<sup>2</sup>;  $P < 0.006$ . Hypertension was corrected in six patients. Dyspnea was resolved in eight patients with a

return of their capacity to perform normal physical activities. There was a complete resolution of diabetes in three patients, and hyperlipidemia in four patients. The follow-up was not long enough to evaluate the effects of the procedure on joint pains and social handicaps.

The total number of patients in this series was too small to draw any definite conclusion; however, the efficacy of ASGB seems to be similar to that of VBG, as far as weight reduction and improvement in the obesity associated comorbidity are concerned. In addition, ASGB has two major advantages: absence of failure from staple line disruption, and a good food tolerance because the stoma size is adjustable to the patient's need. In contrast to VBG, the ASGB procedure is fully reversible after cutting the prosthesis.

**Evolution of energy expenditure during weight loss after vertical banded gastroplasty.** D Honorat, M Laville, JP Riou (*Service d'endocrinologie, diabétologie, nutrition, CRNHL, hôpital Édouard-Herriot, 69347 Lyon, France*)

During low calorie diets, a decrease in resting metabolic rate (RM) is observed, limiting their mid-term efficiency. Vertical banded gastroplasty (VBG) imposes a prolonged period of caloric restriction and allows a study of RM at the same time as body weight loss. We studied 74 obese subjects (65 women, nine men), aged  $35 \pm 1$  years old, of initial body weight (BW)  $126 \pm 3$  kg and initial body mass index (BMI)  $48 \pm 1$  kg/m<sup>2</sup>, before and up to 24 months after VBG ( $n = 25$ ). RM was measured by indirect calorimetry (Datex Deltatrac) in a fasting state before and 3, 6, 12 and 24 months after VBG. Body weight evolution was as follows:  $108 \pm 3$  kg at 3 months ( $P < 0.001$  vs initial BW),  $97 \pm 4$  kg at 6 months ( $P < 0.001$  vs 3 months),  $87 \pm 3$  kg at 12 months