

OBESITY

Thyroid function alterations in individuals following weight loss by laparoscopic gastric banding

The evidence is conflicting as to whether weight loss has subsequent effects on circulating thyroid hormone levels. Dall'Asta *et al.* now report altered levels of free T_3 and free T_4 in a large group of obese patients with normal thyroid function following weight loss achieved through laparoscopic gastric banding. “[Previous] studies were performed in small series of subjects and/or for short periods, techniques to obtain weight loss were extremely different, and control subjects were not included,” write the authors.

Prior to surgery, levels of TSH, free T_3 and free T_4 were higher in 258 patients with obesity than in 99 healthy participants; however, all thyroid hormone levels were within the normal range. Following weight loss by laparoscopic gastric banding, the researchers noted a significant decrease in free T_3 levels and a significant increase in free T_4 levels (which led to an

“thyroid hormone alterations ... may be caused by decreased activity of D1 and D2 iodothyronine deiodinases”

overall decrease in the free T_3 :free T_4 ratio) in individuals with obesity when compared to measurements in healthy controls. In contrast to previous studies, there was no comparative difference between TSH level changes in patients with obesity after weight loss and corresponding levels in healthy controls—the authors stress such discrepancies may be due to varying methods of weight loss and increased weight reduction in previous studies. Furthermore, the free T_3 :free T_4 ratio correlated with BMI in obese patients at 6 and 12 months following surgery, whereas free T_3 , free T_4 and free T_3 :free T_4 ratio

changes correlated with a decrease in body weight at 12 months following surgery.

The authors speculate that the thyroid hormone alterations following weight loss in patients with obesity may be caused by decreased activity of D1 and D2 iodothyronine deiodinases—enzymes that convert free T_4 to free T_3 —or to changes in T_3 conversion rates. “The hypothalamic–pituitary–thyroid axis could be altered as TSH is not responding to the decline in T_3 , perhaps due to site-specific changes in D2 activity [or] more specifically increased hypothalamic D2 activity during caloric restriction,” write the authors.

Rowan Higgs

Original article Dall'Asta, C. *et al.* Weight loss through gastric banding: effects on TSH and thyroid hormones in obese subjects with normal thyroid function. *Obesity* doi:10.1038/oby.2009.320