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OBESITY AND ENDOCRINE ABNORMALITIES

Summary:

The obesity associated changes in endocrine function are secondary and can be reversed by weight loss.
Pituitary gland. The only consistent abnormality of the anterior pituitary involves growth hormone. Concentrations of growth hormone are lower in young obese subjects than in lean controls. The decrease in growth hormone may be mediated by negative feedback action of IGF I. Gonadotropin and TSH concentracions are intact.
Thyroid gland. Thyroid hormone concentrations are normal in obesity, although a few subjects have an elevated triiodothyronine (T3). With caloric restriction the T3 level falls.
Endocrine pancreas. The obesity is common associated with hyperinsulinism and insulin resistance. Insulin resistance is probably due to obesity, but several factors may contribute. Pancreatic glucagon is elevated in at least some subjects.
Adrenal gland. The cortisol production may be elevated in obesity, basal plasma cortisol and urinary free cortisol values tend to be normal. Overnight dexamethasone suppression is normal in about 90% of obese controls but in only 2% of subjects with Cushing syndrome. Thus about 10% of obese patints in whom Cushing syndrome is in question will need the standard dexamethasone suppression test. Obese subjects show suppression in the standard test.
Testis. The testosteron level in plasma of massively obese men is low and a few obese men have low free concentrations of testosterone. Concentrations of estradiol and estrone are both increased in obese men. The increased estrogenization of obese men is usually clinically silent: gynecomastia, impotence and feminization are rare.
Ovary. Free and total estradiol levels are elevated in obese women. Continued overproduction of estrogens may be important in menopausal obese women (osteoporosis, coronary disease, uterine cancer).