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Reproductive hormone levels in patients with severe obesity undergoing bariatric surgery

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Background: Severe obesity is associated with altered levels of reproductive hormones, which has potential implications for an individual's fertility and cancer risk. The aim of this study was to assess the prevalence of obesity-associated gonadal dysfunction in a cohort of Irish patients with severe obesity.

Methods: Patients with severe obesity [body mass index (BMI) >30 kg/m²] undergoing preparation for bariatric surgery over a 3-year period were included in this study. Their preoperative data were prospectively collected, including patient demographics, preoperative weight and obesity complications. Hormonal assays included total testosterone, oestradiol and sex hormone binding globulin (SHBG).

Results: A total of 128 patients were included. The majority of patients were female (70.3%, n=90). The mean age (±SD) of males and females was 51.1±9.7 and 48.4±9.4 years respectively. The mean preoperative weight was 138.2±25 kg in females and 168.8±37.8 kg in males. The mean BMI was similar with 52.4±10.98 kg/m² in males and 51.4±8.7 kg/m² in females. In males, as BMI increased, there was an overall decrease in testosterone (10.6±6.307 nmol/L in BMI 30–40 kg/m², 6.471±3.381 nmol/L in BMI >60 kg/m²) and SHBG

(42.075±34.012 in BMI 30–40 kg/m², 32.1±14.617 nmol/L in BMI >60 kg/m²). In females, as BMI increased, there was an overall increase in testosterone (0.7±0.394 nmol/L in BMI 30–40 kg/m², 1.1±0.54 nmol/L in BMI >60 kg/m²). In patients with type 2 diabetes, the mean levels of all three hormones in females, and testosterone and oestradiol in males were lower compared to patients without.

Conclusions: The severity of obesity is proportional to gonadal dysfunction, particularly in the reduction in testosterone levels in men.

Keywords: Bariatric surgery; obesity; reproductive hormone levels

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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