Increased prevalence of high Body Mass Index in patients presenting with pituitary tumours: severe obesity in patients with macroprolactinoma

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INTRODUCTION: Prolactinoma has been associated with obesity. As opposed to ACTH- and GH-secreting adenoma, the mechanism by which macroprolactinoma causes obesity has not been fully understood. Having seen patients with both prolactinoma and obesity and more recent literature on brain dopamine, dopamine 2 receptors and obesity, we re-evaluated the potential relationship between prolactinoma and obesity. METHODS: Data of patients with pituitary adenomas were collected retrospectively over a period of 20 years. 399 patients with well-documented pituitary adenomas and information about pre-treatment body mass index (BMI), age, sex, and tumour type were analysed. RESULTS: Elevated BMI (> or = 30 kg/m2) was observed in 8/36 patients (22.2%) with ACTH-producing tumours, in 15/70 (21.4%) with GH-producing tumours, in 25/100 (25%) with macroprolactinoma, in 8/81 (9.9%) with microprolactinoma, and in 18/105 (17.1%) with inactive macroadenomas. Macroprolactinoma patients had a mean BMI value (27.5 +/- 7.7 kg/m2) similar to that of patients with Cushing’s disease (27.2 +/- 5.9 kg/m2) and acromegaly (27.4 +/- 4.4 kg/m2) and on average a significantly higher BMI value compared to that of patients with inactive macroadenomas (25.8 +/- 4.4 kg/m2) (95% CI 1.2, 4.4; p-value <0.001). Compared to the general population, the proportion of BMI > or = 30 kg/m2 in patients with macroprolactinoma was significantly higher (95% CI 0.1, 0.29; p-value <0.001). CONCLUSIONS: Average BMI in macroprolactinoma patients is significantly higher than BMI in patients with inactive adenomas. Macroprolactinoma is associated with increased frequency of obesity compared to the general population. We propose that in a subgroup of individuals obesity and macroprolactinoma may share a common basis, namely decreased dopamine 2 receptor-mediated actions.