Thyrotoxicosis and Tirzepatide: Management Challenges

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Background

Thyrotoxicosis is associated with weight loss and an increase in energy expenditure. Treatment often causes weight gain, an undesirable outcome for patients with pre-existing overweight/obesity. Tirzepatide, a dual GIP/GLP1 receptor agonist is a potent anti-obesity agent which has been shown to lead to an average weight loss of around 10%. The interaction of Tirzepatide with thyroid function in thyrotoxicosis remains understudied. We report a patient with obesity diagnosed with thyrotoxicosis while on Tirzepatide.

Case History

A 36-year-old Emirati lady presented with a recent diagnosis of Grave's Disease (FT4 51.8 pmol/l, TSH <0.005 mU/l, TSH receptor antibody 1.90 (normal <1.75) iU/l). She was overweight (weight 71 kg, BMI 27 kg/m2), and had been on Tirzepatide (latest dose 10 mg weekly) for obesity. She had lost 25 kg in weight over the previous year. Following the diagnosis of thyrotoxicosis two months previously, Tirzepatide had been discontinued. This made her regain some weight (2.8 kg), about which she was unhappy. Previous history included asthma, anaemia, polycystic ovary syndrome (PCOS), uterine fibroids, and breast lumps. Apart from mild diffuse thyromegaly and sinus tachycardia with a rate of 103 beats per minute, the examination was otherwise unremarkable. She had normal haemoglobin. She was commenced on Carbimazole with an initial dose of 30 mg daily. Her Thyroid function tests improved with her FT4 six weeks after carbimazole initiation, reaching 17.3 pmol/l, although her TSH remained suppressed. The carbimazole dose was reduced to 20 mg daily. Her FT4 had further improved to 13 pmol/l 10 weeks after starting treatment. By this time, she had gained 6 kg in weight while remaining off Tirzepatide.

Discussion

This case raises important questions on the management of concomitant thyrotoxicosis and overweight in patients on weight loss medication, in particular, Tirzepatide. 1-Should Tirzepatide be discontinued? 2-If so, at what point can it be re-commenced? 3-What is the optimal treatment regimen for thyrotoxicosis in such cases? 4-Is the development of thyrotoxicosis related to Tirzepatide?

Conclusion

This case highlights the complexities of managing patients with thyroid disease, obesity, and multimorbidity. This patient is currently on the block-and-replace regimen, off Tirzepatide and under regular follow-up.