

Case of resistant hypocalcaemia secondary to iatrogenic hypoparathyroidism, treated successfully with teriparatide

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Background

Inappropriately low circulating PTH levels following thyroid surgery, is the most common cause of iatrogenic hypocalcaemia. Standard treatment of hypoparathyroidism has comprised vitamin D analogue and calcium supplementation. However some patients remain hypocalcaemic despite use of maximal titrated and tolerated therapy. Teriparatide is a recombinant formulation of endogenous PTH, containing 34 amino acid sequence which is identical to the N-terminal portion of this hormone. We report a case of severe hypocalcaemia secondary to hypoparathyroidism treated successfully with teriparatide.[1]

Case History

A 65 year old female was admitted to King's College Hospital in September 2016 with right upper limb weakness and numbness. She reported nausea, vomiting and diarrhoea. Her past medical history included total thyroidectomy for goitre with subsequent hypothyroidism and iatrogenic hypoparathyroidism. Medications included intramuscular ergocalceferol 600,000 units monthly, calcit 2 gm bd and alfacalcidol 9 mcg daily. Biochemistry revealed a corrected calcium 1.67 mmol/L and magnesium 0.69 mmol/L. ECG demonstrated sinus rhythm with a normal QTc interval. She received intravenous calcium infusions with significant symptomatic improvement.

Over the course of the subsequent 18 months, despite escalating doses of calcium and vitamin D supplementation, she presented to hospital trusts on multiple occasions with recurrent, symptomatic, severe hypocalcaemia. Requirements escalated to weekly IV calcium infusions.

An individual funding request (IFR) was submitted for teriparatide which was initiated in March 2018. Serum calcium normalised 7 weeks after drug initiation in conjunction with alfacalcidol 4 mcg morning and 3 mcg evening with cholecalciferol 6400 units once daily. Since commencing teriparatide, administration of intravenous calcium has not been required, thus decreasing the frequency of hospital admissions.

Result



Discussion

Hypoparathyroidism is a hormone deficiency where conventional treatment does not replace the missing hormone. There has been accumulated experience of use of PTH analogues since 1996 in both children and adults (Age 5-70 years). Eucalcaemia was achieved more consistently and no differences in urinary calcium were observed.[2]

In January 2015, the FDA approved the use of PTH for the treatment of hypoparathyroidism. This molecule has a longer half-life, which allows for a single daily application. Studies have shown that the dose of PTH may be titrated between 25-100 µg, thus enabling a reduction in the doses of calcium and vitamin D supplementation. Serum calcium must be monitored since episodes of hypercalcaemia have been described, most commonly with the dose of 100 µg. In some cases, calcium and vitamin D supplements may be discontinued.[1]

Conclusion

Teriparatide therapy is not routinely recommended for the management of hypocalcaemia secondary to hypoparathyroidism but should be considered for cases resistant to high dose calcium and vitamin D supplementation[1]. Avoidance of frequent hospital admissions is both cost effective and improves patient quality of life.

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2. Winer KK, Ko CW, Reynolds JC, et al. Long-Term Treatment of Hypoparathyroidism: A Randomized Controlled Study Comparing Parathyroid Hormone-(1-34) Versus Calcitriol and Calcium. *J Clin Endocrinol Metab.* 2003;88(9):4214-4220. doi:10.1210/jc.2002-021736