

Severe hypercalcaemia in sarcoidosis: Is Vitamin D replacement safe?

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BACKGROUND

- There has been a wide interest in the role of vitamin D in extra-skeletal systems with subsequent increased access to vitamin D supplementation.
- However, in patients with granulomatous disease, peripheral activation of vitamin D raises the possible risk of vitamin D toxicity in patients receiving Vitamin D supplementation.

AIM

- To highlight the issue of vitamin D supplementation in patients with sarcoidosis.

CASE REPORT

- We report the case of a 66-year-old lady, who presented with a one-week history of general weakness, drowsiness, nausea and confusion.
- 6 weeks prior to presentation, she underwent right-sided intra-medullary nail insertion for a traumatic femur fracture, whilst abroad.
- Her past medical history includes stage IV pulmonary sarcoidosis, pulmonary hypertension and vitamin D deficiency.
- Immediately post-operatively, she was started on calcium and vitamin D supplement including calcitriol (0.25 µg daily) and cholecalciferol (60,000 IU twice weekly).
- On examination, she was clinically dehydrated with a blood pressure of 105/52 and sinus tachycardia of 110 beats per minute. She had bibasal crepitations on chest auscultation. Examination of neurological and GI systems was unremarkable.
- Initial investigations revealed adjusted calcium of 5.35 mmol/L (NR 2.2-2.6), Phosphate 1.33 mmol/L (NR 0.8-1.5), creatinine 342 µmol/L (baseline 70 µmol/L), Urea 17.2mmol/L, PTH 1.2 pmol/L (NR 1.1-6.8). ECG showed sinus tachycardia with a cQT of 480 msec. Four months prior to presentation, 25 hydroxy-vitamin D (25(OH)D) level was 24.6 nmol/L (NR 70-150).
- Her hypercalcaemia was felt to be secondary due to Vitamin D toxicity on the background of sarcoidosis. She was admitted to HDU, where she was treated with aggressive fluid resuscitation, increased dose of glucocorticoids, Calcitonin and diuretics, with subsequent clinical and biochemical improvement (Chart 1).
- The result of 25(OH)D level came back raised at 390 nmol/L.

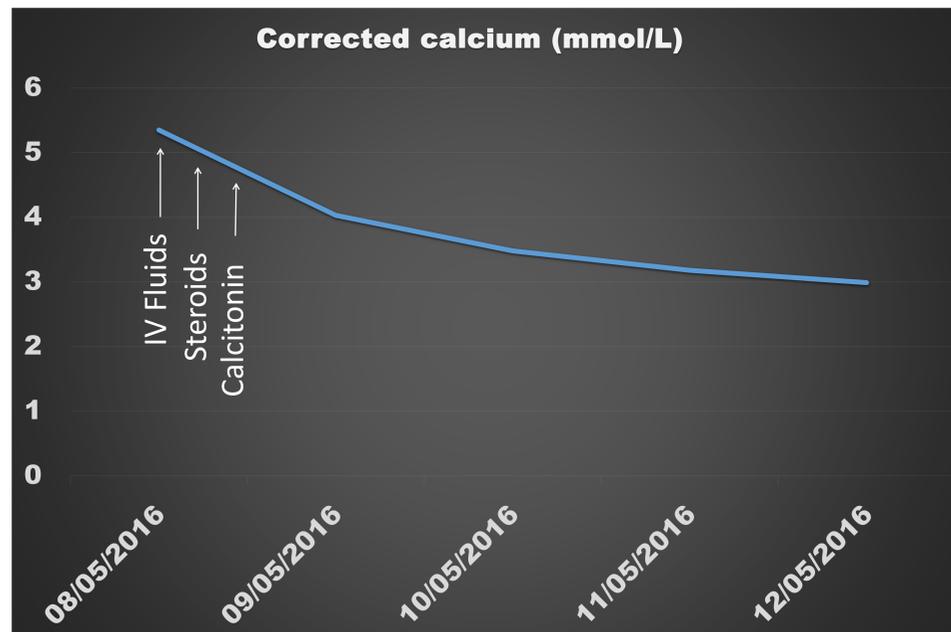


Chart 1: Corrected calcium following treatment

DISCUSSION

- In patients with sarcoidosis, Interferon gamma-mediated inflammation results in stimulation of 1 α-hydroxylase enzyme, which is responsible for the conversion of 25(OH)D to active 1,25(OH)₂D₃
- This can result in adequate 1,25(OH)₂D₃ levels with insufficient 25(OH)D. Therefore, pharmacological vitamin D supplementation in patients diagnosed with vitamin D deficiency, based on 25(OH)D measurement, can potentially increase the risk of hypercalcaemia secondary to vitamin D toxicity.
- In one small RCT, Vitamin D supplementation had no benefit on surrogate markers of skeletal health and caused one case of significant hypercalcaemia.

CONCLUSION

- This case highlights the importance of practising caution when prescribing vitamin D particularly in patients with a background of granulomatous diseases.
- Measurement of active form of vitamin D in those patients should be considered.

REFERENCES

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