Difficulties in the diagnosis and treatment of tumour induced hypophosphatemic osteomalacia

Higham, C.E. Davies, M. Soran, H.
Department of Metabolic Medicine, Manchester Royal Infirmary, Manchester UK.

A 37 year old gentleman presented in 1982 with bilateral femoral neck fractures following a minor road traffic accident. The fractures remained unhealed at 6 mths and biochemistry revealed serum phosphate (Pi) of 0.37 mmol/l (0.7-1.4) and corrected calcium (CoCal) of 2.38 mmol/l (2.15-2.65). He was referred to the metabolic bone team. Further questioning and tests revealed a 2 yr history of bony pain and myopathy, ALP 160 U/L (40-129), 25(OH)vitD 27.2 ng/ml (>30) and reduced conversion- 1,25(OH)vitD 21.3 pg/ml (20-50) with normal PTH 0.6 ng/ml. Twenty four hr Cal excretion (2.46 mmol) and renal acidification was normal but he had reduced renal absorption of Pi. Skeletal survey demonstrated Looser’s zones and osteomalacia was confirmed on bone biopsy. Biochemical and histopathological abnormalities were consistent with a diagnosis of acquired phosphatemic osteomalacia presumed secondary to a benign mesenchymal tumour (TIO).

Search for the tumour included a full skeletal survey, 99m Technicium bone scan, gallium scan and CT scan. No tumour was identified. Treatment was initiated with sandophos 0.5g qds, calcitriol 1mcg od and sandocal 1 tablet bd. After 2 years he was symptomatically improved, bone biopsy demonstrated good mineralization. After 5 years sandocal was stopped. Seventeen years later, in 2000, octreotide scanning became available and revealed a small focus of increased uptake in the symphysis pubis. CT confirmed a 1.5 cm ring enhancing lesion consistent with tumour. Unfortunately the patient was reluctant to undergo biopsy or removal of tumour at this time.

In 2003 CoCal began to rise above normal limits accompanied by an increase in PTH. By 2005 serum CoCal was 2.74 mmol/l, PTH was 331 pg/ml. This was presumed tertiary hyperparathyroidism secondary to prolonged phosphate supplementation. Serum creatinine began to rise reaching a peak of 199 mmol/l (92 mmol/l in 2002). Sandophos and calcitriol were stopped leading to a resolution in serum creatinine but Pi decreased to 0.53 mmol/l and 1,25(OH)vitD to 12 pg/ml. He elected to undergo CT guided biopsy and radiofrequency ablation of the lesion in 2005. Biopsy confirmed the presence of a benign mesenchymal tumour. Ablation led to little resolution in biochemistry and the patient eventually consented to surgical removal.

Following surgery, Pi (0.83 mmol/l), 1,25 vit(OH)D (56 ng/ml) and ALP (97 IU/L) normalized with no supplementation required. However raised PTH and hypercalcemia persisted. BMD showed t scores of – 3.3 at the hip and -5.1 at the forearm. He is reluctant for further intervention in this regard.

Conclusion.

We describe a case of the rare TIO and the importance of an aggressive search for the tumour as removal is curative. We also highlight the important complication of tertiary hyperparathyroidism due to prolonged phosphate supplementation.