Spontaneous Remission of Severe Hyperparathyroidism in Chronic Renal Failure

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Dear Sir,

We were interested to read the paper by Charhon et al. [1] concerning a case of spontaneous resolution of severe hyperparathyroidism in a patient on a long-standing dialytic treatment. Necrosis of a large parathyroid gland (a well-recognized, though unusual, event in primary hyperparathyroidism due to a single parathyroid adenoma) [2, 3], was correctly supposed to be the most likely explanation for the sudden hypocalcemia in the patient described, even though all parathyroid glands are usually hyperplastic in chronic renal failure. Unfortunately, Charhon et al. [1] were unable to give a pathologic confirmation of their suggestion; the authors [4] of a second recent report of a very similar case could not do so either.

Thus we thought it would be worth reporting a further case of a patient with chronic renal failure and severe hyper-parathyroid bone disease who developed abrupt, severe hypocalcemia and in whom spontaneous, massive hemorrhagic necrosis of a large parathyroid gland (the other three being hyperplastic were unaffected) was surgically proven.

A 48-year-old female patient was referred in January 1980 to our department for severe bone disease and chronic renal failure due to chronic pyelonephritis. On a previous hospitalization in 1977 her serum creatinine was 0.62 mmol/l (7 mg/dl), plasma calcium 2.2 mmol/l (8.8 mg/dl), plasma phosphate 1.67 mmol/l (5.2 mg/dl). Her present status showed plasma calcium levels ranging from 2.45 to 2.75 mmol/l, plasma phosphate from 1.67 to 1.74 mmol/l, PTH (C-terminal fragment) from 35.5 to 42 ng/ml (normal values 0.4–1.9), alkaline phosphatase 1,400 IU/l (normal values 30–170). Plasma creatinine was 0.88 mmol/l and creatinine clearance was 5 ml/min.

There was radiological evidence of severe hyperparathyroid bone disease, with intracortical and subperiosteal bone resorption of the phalanges, 'salt and pepper' appearance of the skull, cystic lesions of the pelvis and ribs; bone biopsy showed osteoclastic resorption, excess osteoid and bone marrow fibrosis. Parathyroidectomy was planned and in the meantime hemodialysis was started. 3 days before the planned surgery, the patient complained of tingling of the hands, vague cervical pain and fever (up to 38°C), plasma calcium was 1.17 mmol/l, phosphate 0.93 mmol/l, PTH 26 ng/ml. She was treated with CaCl_2 i. v. and 1,25-(OH) $_2$ -D $_3$ 4 µg/day to raise plasma calcium to 2.2 mmol/l, while plasma phosphate fell as low as 0.58 mmol/l.

On February 2, 1980, a surgical exploration of the neck was performed: a 3 × 3 × 4 cm right lower parathyroid gland was found to be massively necrotic and hemorrhagic with only a thin

subcapsular rim of viable cells seen on histologic examination; two other $1.2 \times 0.9 \times 0.9$ cm (lower left) and $1 \times 0.8 \times 0.7$ cm (upper left) parathyroid glands, showing histologic nodular hyperplasia, were also resected, while a fourth gland (upper right, approximately 0.7 cm in diameter) was left in place. 2 weeks later, PTH was 5.9 ng/ml, plasma calcium 2.35 mmol/l, plasma phosphate 0.45 mmol/l and alkaline phosphatase 1,150 IU/l, on treatment with 2 µg/day 1,25-(OH)₂-D₃ and 2 g elemental calcium p. o.

Rapid onset of hypocalcemic symptoms and signs, and cervical pain in a dialyzed patient with severe bone disease are the distinctive clinical features in our patient and in two previous reports [1, 4]. In our case, spontaneous hemorrhagic necrosis of a large parathyroid gland, with the sudden loss of at least 60% of all parathyroid tissue, was shown to be the definite cause of this clinical picture. The other three parathyroid glands were shown to be hyperplastic, as was possibly the case in the patients described by Ahmad et al. [4] and Charhon et al. [1], since PTH levels in these patients were still high when hypocalcemia was detected, although to a much lower level than before the event.

Thus, the development of severe hypocalcemia, rather than being an effect of true and complete hypoparathyroidism, was most likely a 'hungry bone' phenomenon, coincident with a dramatic fall of PTH levels in the presence of severe bone disease. The parallel fall of plasma phosphate levels in all 3 patients is consistent with this explanation. Likewise, prolonged hypocalcemia and hypophosphatemia can supervene after successful parathyroidectomy in some patients with primary hyperparathyroidism with severe bone disease, despite the development of sustained secondary hyperparathyroidism [5].

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