

Radiographic Appearance Of Primary Hyperparathyroidism With Atypical Parathyroid Adenoma

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Abstract

Classical radiological descriptions of primary hyperparathyroidism are infrequently seen with early diagnosis and management in recent times. A patient with brown tumor in primary hyperparathyroidism secondary to an atypical parathyroid adenoma is presented.

INTRODUCTION

Brown tumors are seen in severe untreated primary and secondary hyperparathyroidism. They are infrequently seen today due to early diagnosis and management. A classical description of clinical presentation and radiographic images of a patient presenting with brown tumor secondary to an atypical parathyroid adenoma is presented.

CASE REPORT

A 32 year old lady presented with pain and progressive swelling in her left thigh for seven months and inability to bear weight on the limb for two months. She had generalized weakness, anorexia and weight loss and received no treatment prior to admission. On examination there was a mid thigh swelling measuring 10 X 7 cm, which was non tender and hard. The overlying skin was normal.

Investigations showed mild anemia and normal renal function with hypercalcemia, hypophosphatemia and elevated serum alkaline phosphatase (serum calcium 16.4 mg/dL, serum phosphorus 2 mg/dL and serum alkaline phosphatase 1004 U/L.) The intact parathormone (PTH) was 3462 pg/ml. A paraneoplastic, multiple endocrine neoplasia and myeloma screen was negative. 24 hour urinary calcium was high. A radiological skeletal survey showed brown tumor in the axial and appendicular skeleton. There was a pathological fracture of the mid shaft of the left femur. (Figure 1) Ultrasound and subsequent magnetic resonance imaging of the neck were consistent with adenoma. No features of hypercalcemic crisis were present. Primary hyperparathyroidism (PHPT) with brown tumor and pathological fracture of the left femur was diagnosed and the

patient underwent right inferior parathyroidectomy. A 4 X 2 cm parathyroid gland, firm to hard in consistency was excised with no complications. The immediate post operative intact PTH value dropped to 560 pg/ml and was 67 pg/ml at discharge. Histology of the parathyroid gland was suggestive of atypical parathyroid adenoma. The patient was supplemented with calcium, vitamin D₃ and phosphorus post operatively and recovered satisfactorily. The fracture united with conservative management over the next nine months. (Figure 5) She is able to ambulate with support a year after discharge.

Figure 1

Figure 1: X-ray Left Femur shows a well marginated cortical lytic lesion with endosteal scalloping in the distal femur (brown tumor). A pathological fracture through a similar lesion is noted proximally.



Figure 2

Figure 2: X-ray Pelvis shows well marginated, mildly expansive lytic lesions in the iliac alae bilaterally (brown tumors). Bone resorption of the left anterior superior and inferior iliac spines is noted.



Figure 3

Figure 3: X-ray Wrist shows marked subperiosteal bone resorption in the radial aspect of the middle phalanges of the 2 and 3 digits.



Figure 4

Figure 4: X-ray Skull (Lateral) shows diffuse trabecular resorption, giving a granular 'salt and pepper' appearance. Loss of distinction between the outer and inner tables of the skull is seen.

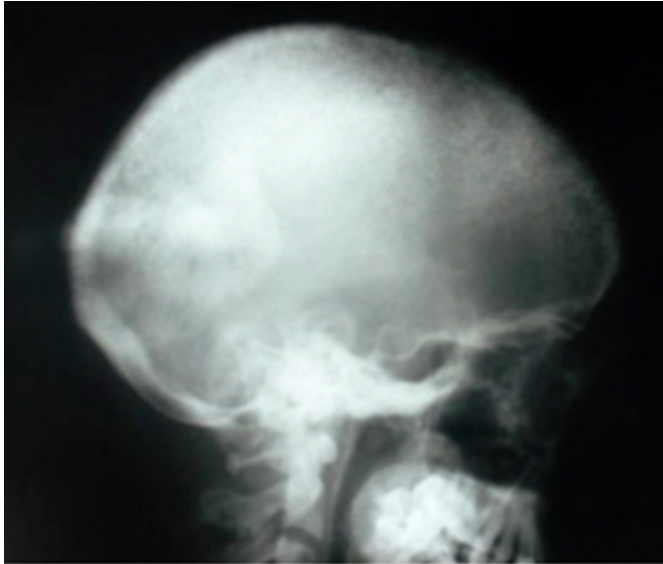


Figure 5

Figure 5: X-ray Left Femur taken nine months after fracture shows union of the fracture fragments with callus formation. Brown tumor is seen in the distal femur.



DISCUSSION

Primary hyperparathyroidism is increasingly diagnosed in patients with hypercalcemia and high intact serum parathyroid hormone level. Persistently elevated serum parathyroid hormone concentrations have catabolic effects on bone.² Radiographic manifestations of PHPT, seen in less than 2% of patients, include sub periosteal erosions, diffuse osteoporosis, cystic lesions ('brown tumors'), pathological fractures, 'salt and pepper' mottling of skull, resorption of the distal end of clavicles and loss of lamina dura in the mandible. Radiographic features suggest severe hyperparathyroidism.³ (Figure 3 - 4) Brown tumor is a localized bone tumor and an uncommon manifestation of hyperparathyroidism. It has been rarely reported as the primary manifestation of an atypical parathyroid adenoma.⁴ Symptomatic PHPT patients should undergo parathyroidectomy resulting in normalization of biochemical

values and increased bone mineral density.⁵ Non-union of fractures in PHPT is rare and healing after excision of the adenoma is usually uneventful.⁶

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