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BROWN TUMOR MASQUERADING AS GIANT CELL TUMOR

RADIODIAGNOSIS

Dr Uddandam Rajesh Radiologist Armed Forces Medical College Pune – 411040

Dr Shijith KP Radiologist Army Hospital (R&R) New Delhi – 110010

ABSTRACT

Brown tumors are focal lesions associated with primary or secondary hyperparathyroidism. The histological findings of the tumor are similar to those of giant cell tumors, reparative giant cell granuloma and aneurysmal bone cyst, and may cause confusion in diagnosis. We report here a case of a 43 year old lady who was initially diagnosed as a case of giant cell tumor of tibia, but on subsequent investigations was found to be a case of multiple Brown tumors due to primary hyperparathyroidism.

KEYWORDS

Brown tumor, Radiographs, Hyperparathyroidism, Parathyroid adenoma

INTRODUCTION

Brown tumors are giant cell focal lesions associated with primary or secondary hyperparathyroidism (1). Although these tumors are present in primary hyperparathyroidism, cases associated with chronic renal failure (CRF) are being reported with increasing frequency (2). We report here a case of a 43 year old lady who was initially diagnosed as a case of giant cell tumor of tibia, but on subsequent investigations was found to be a case of multiple Brown tumors due to primary hyperparathyroidism.

CASE REPORT

43 year old lady presented with complaints of recurrent pain in left leg of 10 months duration. She initially consulted an Orthopaedician in a local hospital and was diagnosed to be a case of giant cell tumor left tibia after radiographs of left leg and biopsy of the lesion seen in the radiographs.

She was subsequently referred to our hospital for further evaluation. On questioning, she gave history of severe pain in the left leg, which was intermittent and non-radiating. Patient also had polyuria, polydipsia, weakness and hypotonicity of muscles. Blood investigations revealed elevated serum calcium and serum alkaline phosphatase levels. She also had markedly elevated serum parathormone (PTH) levels (5,800 pg/ml). Her renal function tests were within normal limits.

Radiograph of the left leg was done for the patient in antero-posterior (AP) and lateral projections (Fig 1), which showed lucent lesions involving the cortex and medulla of the shaft of left tibia. The lesions were well defined with no marginal sclerosis, no matrix calcifications and no periosteal reaction. Soft tissues of left leg appeared normal. Radiograph of the skull was done for the patient in lateral projection (Fig 2), which showed granular salt and pepper skull. Loss of distinction was seen between inner and outer tables with ground glass appearance.



Fig 1 – Radiograph of the left leg in AP and lateral projections shows well defined lytic lesions involving the cortex and medulla of the shaft of left tibia.



Fig 2 – Radiograph of the skull in lateral projection shows granular salt and pepper skull. Loss of distinction between inner and outer tables is seen with ground glass appearance.

Sagittal and transverse sonogram of the left lower cervical region (Fig 3) showed 46 x 30 x 18 mm well defined hypoechoic lesion posterior to the inferior pole of left lobe of thyroid – suggestive of left parathyroid adenoma. A small cystic area was seen in the center of the lesion. No calcifications were seen in the lesion. The patient also underwent ultrasound of the abdomen, which ruled out renal calculi.

The patient underwent parathyroidectomy, is on a regular follow up and is better with marked improvement in her symptoms. Her serum calcium, serum alkaline phosphatase and serum PTH levels have normalized.

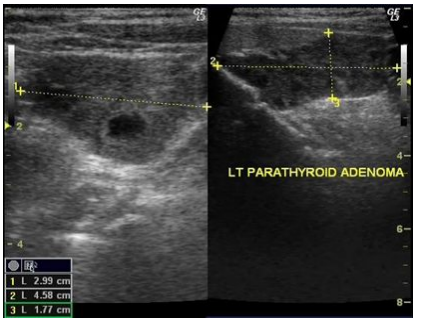


Fig 3 – Sagittal and transverse sonogram of the left lower cervical region shows 46 x 30 x 18 mm well defined hypoechoic lesion posterior the inferior pole of left lobe of thyroid – suggestive of left parathyroid adenoma.

DISCUSSION

Brown tumors are a rare complication of hyperparathyroidism and the end stage of bone remodeling in hyperparathyroidism. They represent a reparative cellular process rather than a neoplastic process. They contain osteoclasts, mononuclear cells and fibroblasts with focal hemorrhage. The hemosiderin from the hemorrhage produces the grossly brown color (3). They may be invasive in some cases but are not potentially malignant (4).

Brown tumors are often seen in the epi-metaphysis & diaphyses of long bones and pelvis. However, they can also be seen in the mandible, maxilla, cranium, ribs, hands and rarely, the vertebrae. The histological findings of the tumor are similar to those of giant cell tumors, reparative giant cell granuloma and aneurysmal bone cyst, and may cause confusion in diagnosis (5). In our patient also, on histopathological examination, the lesions in left tibia were initially diagnosed to be Giant cell tumor.

Brown tumors may be seen in primary or secondary hyperparathyroidism. The most common cause of primary hyperparathyroidism is a solitary adenoma, followed by hyperplasia and carcinoma. Hypocalcemia, hyperphosphatemia and calcitriol deficiency are the main reasons for incre¬ased PTH secretion in cases of secondary hyperparathyroidism. PTH alters the intra- and extra¬cellular calcium ratio, thus increasing bone resorption, decreasing bone density, and causing soft tissue calcium deposits (6).

On radiographs, brown tumors are seen as well-defined lytic lesions that provoke little reactive bone. The cortex can be seen as narrowed and extended; however, there is no penetration. In our patient, they were seen as lytic lesions involving the cortex and medulla of the shaft of left tibia, which were well defined with no marginal sclerosis and no periosteal reaction. On Computed Tomography (CT), their attenuation is seen between the blood and fibrous tissue. They are hypervascular on angiography, and intensely active in bone scintigraphy (7). On Magnetic resonance Imaging (MRI), they may be seen as expansive mass lesion with heterogeneous hyperintensity on T2WI with or without hemosiderin deposits. Tc-99m hexakis methoxyisobutylisonitrile (MIBI) is the most convenient modality for localization of parathyroid adenoma (3).

The effective control of hyperparathyroidism is crucial to prevent and sometimes treat brown tumors. Vitamin D improves serum PTH levels. Medical treatment of brown tumor based on high doses of Vitamin D is effective in many cases. However, most of these lesions require total or subtotal parathroidectomy. The recovery following parathyroidectomy is fast. Our patient also had marked symptomatic improvement after parathyroidectomy. Surgical resection of the brown tumor should be considered if the mass does not regress after correction of hyperparathyroidism or if the patient is symptomatic (8).

CONCLUSION

Brown tumors may be single or multiple and are an uncommon cause of lucent skeletal lesions. The purpose of this paper is to highlight the fact that Brown tumor may be misdiagnosed as Giant Cell tumors on histopathological examination and although rare should be considered as differential diagnosis of lucent bone lesions.

REFERENCES

1. Pinto MC, Sass SM, Sampaio CP, Campos DS. Brown tumor in a patient with hyperparathyroidism secondary to chronic renal failure. Braz J Otorhinolaryngol 2010; 76: 404.
2. Can Ö, Boynueğri B, Gökçe AM, Özdemir E, Ferhatoğlu F, Canbakan M, Şahin GM, Titiz Mİ, Apaydın S. Brown tumors: A case report and review of literature. Case Rep Nephrol Dial. 2016; 6: 46-52.
3. Miyakoshi M, Kamoi K, Takano T, et al. Multiple brown tumors in primary hyperparathyroidism caused by an adenoma mimicking metastatic bone disease with false positive results on computed tomography and Tc-99m sestamibi imaging: MR findings. Endocr J 2007; 54: 205-10.
4. Lessa MM, Sakae FA, Tsuji RK, Filho BC, Voegels RL, Butugan O. Brown tumor of the facial bones: case report and literature review. Ear Nose Throat J 2005;84:432-4.
5. Yalçin MB, Hiz M, Unlü MC, et al. A case of brown tumor mimicking fibrous dysplasia in a patient with chronic renal failure. Acta Orthop Traumatol Turc 2008; 42: 296-301.
6. Dusunsel R, Guney E, de Gunduz Z, Poyrazoglu MH, Yigitbasi OG, Kontas O. Maxillary brown tumor caused by secondary hyperparathyroidism in a boy. Pediatr Nephrol 2000;14:529-30.
7. Park SH, Kong GM, Kwon YU, Park JH. Pathologic fracture of the femur in Brown tumor induced in parathyroid carcinoma: A Case report. Hip Pelvis. 2016; 28: 173-177.
8. Fatma LB, Barbouch S, Fethi BH, et al. Brown tumors in patients with chronic renal failure and secondary hyperparathyroidism: report of 12 cases. Saudi J Kidney Dis Transpl 2010; 21: 772-7.