

Brown Tumors Secondary to Tertiary Hyperparathyroidism Masquerading as Lytic or Sclerotic Skeletal Metastases on Preoperative/Postoperative 18F-Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography: A Case Report

Abstract

Tertiary hyperparathyroidism (TH) is a rare condition that develops from secondary hyperparathyroidism in cases when the secretion becomes autonomous. Brown tumors (BTs) are rare skeletal lesions of hyperparathyroidism that may mimic cancer metastasis. We report a case of a patient who was diagnosed with TH with multiple BTs which mimics osteolytic/osteoblastic metastases that were evaluated with two fluorodeoxyglucose positron emission tomography scans with an interval of 23 months in the preoperative and postoperative period.

Keywords: Brown tumors, fluorodeoxyglucose positron emission tomography/computed tomography, osteoblastic metastases, osteolytic metastases, tertiary hyperparathyroidism

A 43-year-old renal transplant recipient with multiple lytic bone lesions on thoracic computed tomography (CT), which were evaluated in favor of metastasis, was referred to 18F-fluorodeoxyglucose (FDG) positron emission tomography (PET)/CT scan to detect the primary focus. The patient had a complaint of generalized bone pain. In the first PET scan, intense hypermetabolic lytic destructive multiple lesions were observed in the skeleton [Figure 1 arrows in a-c]. A few months ago, dual-phase Tc-99m-MIBI parathyroid scintigraphy was also performed due to high parathormone level (parathyroid hormone [PTH]: 892 pg/mL and Ca: 8.1 mg/dL) and showed parathyroid adenomas at the inferior neighborhood of both lobes of the thyroid gland. The PET scan findings were considered highly suggestive of multiple brown tumors (BTs) secondary to tertiary hyperparathyroidism (TH). Subsequently, parathyroidectomy was performed for TH. The postoperative PTH level was decreased from admission levels to 38 pg/mL. Clinical manifestations receded after surgical treatment. Twenty-three months after the surgical procedure, the patient was evaluated with a new PET

scan for symptoms of anemia and weight loss. The second PET scan revealed multiple sclerotic bone lesions in the skeleton which were described as intensely hypermetabolic lytic destructive lesions previously [Figure 1 arrows in d-f]. There are some publications in the literature about the FDG uptake in BTs.^[1-4] Although they are benign lesions, BTs, giant cell reparative granulomas, aneurysmal bone cysts, giant cell tumors of bone, and osteoclast-like giant cell-containing lesions of bone show increased FDG uptake in favor of malignancy.^[5-11] These benign lesions contain giant cells and/or histiocytes derived from monocyte-macrophage group and provide their energy mostly by glucose metabolism.^[12,13] BTs similarly contain mononuclear cells and fibroblasts derived from the same cell group.^[13] It should be kept in mind that BTs can imitate both osteolytic and osteosclerotic metastases depending on the surgical history, especially in patients with diagnosed TH.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and

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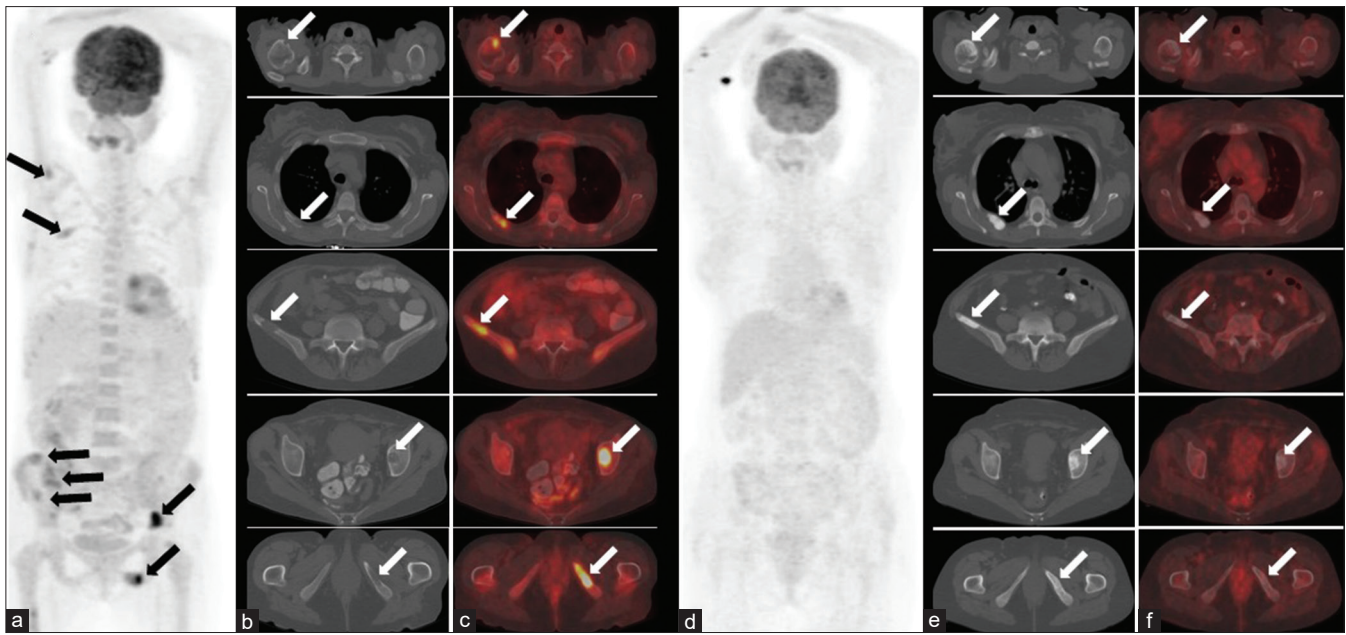


Figure 1: The second PET scan revealed multiple sclerotic bone lesions (d,f) in the skeleton which were described as intensely hypermetabolic lytic destructive lesions previously (a-c)

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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