

# Disseminated bone pain related to brown tumors revealing a parathyroid adenoma: a case report

## Abstract

**Introduction:** Primary hyperparathyroidism is a common disease especially in women but rarely discovered by multiple brown tumors with near normal serum calcium.

**Case report:** A 64-year-old man presented with disseminated bone pain. He had X-rays and a CT scan that objectified lytic lesions. These lesions correspond to multiple areas of intense uptake in bone scan evoking brown tumors. Biology showed calcium at 2.66mmol/l and PTH in serum at 2003 $\mu$ g/l. The diagnosis of parathyroid adenoma was highly suspected that's why we did a Tc<sup>99m</sup> sestamibi dabble phase parathyroid scan. It showed a left inferior parathyroid adenoma.

**Conclusion:** The scintigraphic imaging is a valuable contribution to the diagnosis of brown tumor, it also allows for the etiologic diagnosis by detecting the nodule parathyroid.

**Keywords:** hyperparathyroidism, brown tumour, bone scan, parathyroid adenoma, hypercalcemia, parathyroid hormone, methylene diphosphonate, costal osteolytic lesions

Volume 4 Issue 1 - 2017

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**Received:** November 10, 2016 | **Published:** December 19, 2016

## Introduction

The brown tumor is a benign tumor, which affects patients with hyperparathyroidism. These lesions are rare and occur in 4.5% of cases of primary hyperparathyroidism (HPT)<sup>1</sup> and related to a parathyroid adenoma in 81% of cases.<sup>2</sup>

Primary hyperparathyroidism is a common disease, especially in post menopauses women, rarely in men.<sup>3</sup>

We describe a case of a parathyroid adenoma diagnosed after a Tc<sup>99m</sup> methylene diphosphonate (MDP) whole body bone scan showing the aspect of multiple brown tumors mimicking bone metastases.

## Case report

A 64-year-old man, without significant medical history, presented with multiple bone pain. These pains were not calmed by analgesics. The general condition was maintained and physical examination was normal. There were no clinical signs of Hypercalcemia (polyuria, gastrointestinal symptoms). Biology showed calcium at upper limit level: 2.66mmol/l (the reference range for the laboratory was 2.2-2.6mmol/l). We did X-rays analyses and a CT-scan that showed multiple lytic lesions especially on peripheral bones (Figure 1). Secondary bone metastases were suspected therefore bone scintigraphy was indicated. He did a Tc-99m MDP whole body bone scan which showed multiple areas of intense uptake, within both axial and peripheral skeleton, on the same sites of lytic lesions found on X-rays analyses and CT-scan (Figure 2). That aspect recalls the aspect of disseminated brown tumors, so we dosed the PTH in serum, which was very high: 2003 $\mu$ g/l (the reference range for the laboratory was 11-62 $\mu$ g/l).

The diagnosis of parathyroid adenoma was highly suspected. The patient was then referred for dabble phase parathyroid scintigraphy. Planar images and hybrid single-photon emission computed tomography-computed tomography (SPECT/CT) was performed

after intravenous injection of 555MBq of 99mTc-sestamibi. Planar images showed a large area of pathological uptake of the radiotracer projecting below the lower pole of the left thyroid lobe suggesting an abnormal parathyroid and did not find mediastinal or cervical ectopic gland (Figure 3). The cervico-thoracic SPECT/CT and the fused images beside confirm and localize the left inferior parathyroid adenoma and shows left scapula, right humerus and costal osteolytic lesions (Figure 4). The patient was sent to ORL for surgery. Histology confirmed a parathyroid adenoma. PTH levels decreased considerably after surgery.



Figure 1 X-rays analyses showing lytic lesions on peripheral bones.



**Figure 2** Bone scan showing multiple areas of intense uptake.

## Discussion and conclusion

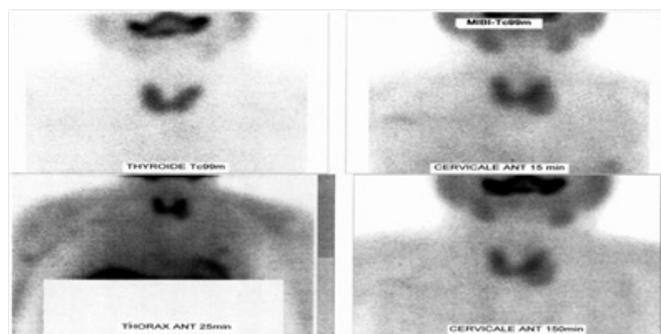
Brown tumor, also known as Von Recklinghausen disease of the bone, is benign osteolytic giant cell tumors associated with the action of parathyroid hormone on bone.<sup>4</sup> They are caused by hyperparathyroidism, which may be primary, secondary and tertiary. Primary hyperparathyroidism due to parathyroid adenoma is one of the leading causes of brown tumor.<sup>2</sup>

In the elderly, when osteolytic lesions are identified in imaging studies, metastatic bone tumor is the first impression that comes to the clinician's mind. In addition to suspecting malignancy, the clinician should be highly alert to other possible causes of bone lesions. Brown tumor should be kept in mind during daily practice. This tumor is a complication of hyperparathyroidism and it may be, however, the only witness to parathyroid's hyper function.<sup>5</sup> That's why the clinician must think about it with patients suffering from bone pains, even when calcium is not really high, and should at least dose the PTH in serum.

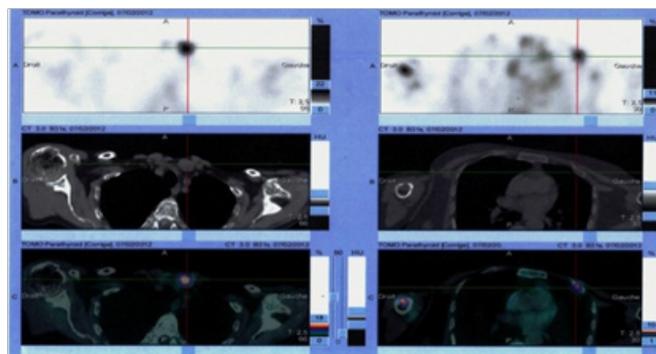
Imaging too, is a valuable contribution to the diagnosis and monitoring of the brown tumor; it also establishes the etiological diagnosis by detecting the nodule parathyroid.

## Acknowledgments

None.



**Figure 3** Tc<sup>99m</sup>-sestamibi double phase parathyroid scan showing a left inferior parathyroid adenoma.



**Figure 4** Tomographic acquisition coupled to a CT-scan of the cervical region showing the left inferior parathyroid adenoma and a left rib brown tumor.

## Conflicts of interest

The author declares there is no conflict of interest.

## References

1. Maruani G, Cornière N, Nicolet L, et al. Hyperparathyroïdie primitive. *La Revue de médecine interne*. 2013;34(10):605–613.
2. Oufroukhia Y, Arsalane A, Biyi A, et al. Tumeurs brunes disséminées : à propos d'un cas. *Médecine nucléaire*. 2011;35:163–166.
3. Ben Dhaou B, Derbali F, Aydi Z, et al. Tumeurs brunes multiples révélant une hyperparathyroïdie primaire. *Médecine Nucléaire*. 2013;37(2):52–55.
4. Heimburgera C, Andresb E, Rusta E, et al. Imagerie morphologique et fonctionnelle des tumeurs brunes. À propos d'un cas de localisation maxillo-mandibulaire. *La Revue de médecine interne*. 2013 ;34(6):377–381.
5. Charfi H, Nouira M, Ezzairi F, et al. Brown tumors mimicking bone and lung metastases: key role of radionuclide imaging. *Presse Med*. 2015;44(7-8):860–864.