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Primary Hyperparathyroidism Revealed by a Brown Tumor: A Series of 9 Cases

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Abstract

Brown tumors are bone manifestations of hyperparathyroidism (HPT). They usually occur in severe forms accompanied by signs of periosteal bone resorption. Their treatment mainly relies on parathyroidectomy.

We report a series of 9 cases of primary hyperparathyroidism revealed by a brown tumor. These clinical cases highlight the importance of phosphocalcic assessment in the presence of any bone swelling suggestive of a brown tumor.

Keywords: Brown Tumor; Hyperparathyroidism; Giant Cell Tumor

Introduction

A brown tumor is a benign, non-neoplastic osteolytic bone lesion occurring in hyperparathyroidism [1]. It belongs to the group of giant cell lesions. It results directly from the action of parathyroid hormone on the bone matrix. It preferentially affects facial bones, especially the mandible. It may also involve the pelvis, ribs, femurs, and spine. In the majority of cases, brown tumors are secondary to primary hyperparathyroidism. Over 80% of cases are related to a parathyroid adenoma [2].

The diagnosis of a brown tumor is crucial since it may regress or disappear after treatment of hyperparathyroidism.

In some cases, surgical excision of both the parathyroid lesion and the brown tumor is necessary [3].

We report a series of 9 cases of primary hyperparathyroidism revealed by a brown tumor.

Materials and Methods

This retrospective study was conducted in the Department of Endocrinology and Metabolic Diseases at Ibn Sina University Hospital in Rabat between 2019 and 2022. The diagnosis of brown tumor was based on a combination of biopsy with histological examination consistent with a giant cell tumor and biological assessment showing hyperparathyroidism.

The following data were collected for each patient: age, sex, medical history, type and etiology of hyperparathyroidism.

Tumor-related data were also gathered: site, number, treatment, and postoperative complications. Patient follow-up was mainly clinical.

Results

The mean age of our patients was 43.3 years, with a sex ratio of 1 man to 8 women. The tumor site was mandibular in all patients; one patient also had spinal and rib involvement. The delay before diagnosis ranged from 8 months to 5 years.

Regarding therapeutic management, four patients underwent surgical excision of the tumor, with spontaneous regression and normalization of phosphocalcic parameters in all patients. During follow-up, one patient died of unknown causes.

Discussion

Primary hyperparathyroidism is a pathology with female predominance (3:1) [4]. It can be discovered incidentally during blood tests revealing asymptomatic hypercalcemia. It is

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Table 1: Summary of our patients' data.

Case	Age	Sex	Site	Delay before Diagnosis	Treatment	Follow-up	Parathyroid Surgery
1	39	F	Mandible	1 year	Conservative	Regression	Yes
2	45	F	sublingual	5 years	Surgical excision	Regression	Yes
3	28	F	Jaw	1 year	Surgical excision	Regression	Yes
4	36	M	Mandible	1 year	Exérèse chirurgicale	Regression	Yes
5	49	F	Mandible	2 years	Conservative	Regression	Yes
6	48	F	Mandible	8 mois	Conservative	Regression	Yes
7	25	F	Jaw	1 year	Surgical excision	Regression	Yes
8	48	F	Mandibule	1 year	Conservative	Regression	Yes
9	72	F	Ribs, Spine Mandible	1 year	Conservative	Deceased	Yes

Figure 1: Frontal view showing the mandibular swelling of patient 1.

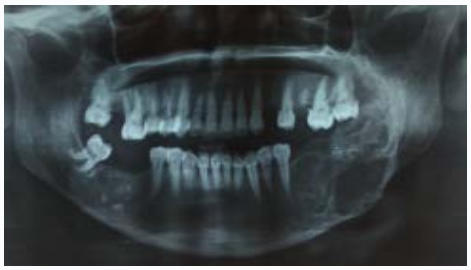

Figure 2: Dental panoramic radiograph showing the brown tumor of patient 1.

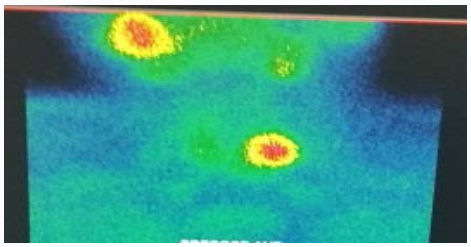

Figure 3: Parathyroid scintigraphy revealing the adenoma in patient 1.

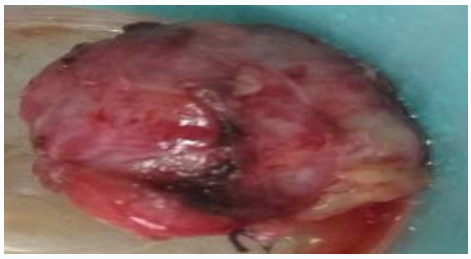

Figure 4: Specimen of the parathyroidectomy from patient 1.

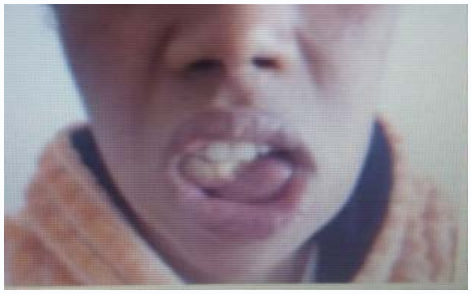

Figure 5: Frontal view showing the mandibular swelling of patient 3.

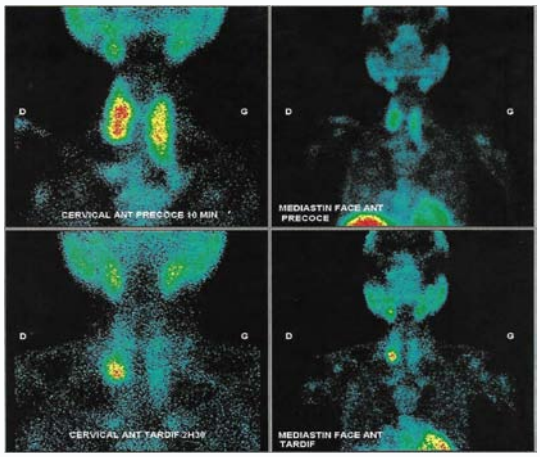

Figure 6: Parathyroid scintigraphy revealing the adenoma in patient 9.

exceptionally revealed by the presence of a brown tumor [5].

Brown tumors are linked in most cases to primary hyperparathyroidism. They represent a late manifestation of the disease; it is rare that a brown tumor is the first and only sign of parathyroid hyperfunction. It mainly affects the mandible, ribs, pelvis, and femur [6].

The diagnosis of a brown tumor related to primary hyperparathyroidism is established based on clinical, radiological, biological, and histopathological evidence [7].

Clinically, symptoms caused by these lesions depend on the size and location of the process. They may cause swelling of the cheek,

palate, or gums with facial deformation and asymmetry, pain, tooth mobility or loss, and sometimes painful bone swelling [8].

Signs of hypercalcemia may also be present.

Radiologically, the brown tumor appears as nonspecific osteolysis with variable aspects. The most common feature is poorly defined bone lysis causing cortical thinning or rupture [7].

Biopsy of the mass confirms the diagnosis by showing giant cell lesions, including true giant cell tumors and granulomas.

Distinguishing between brown tumors and other giant cell lesions is difficult, hence the need for phosphocalcic assessment to establish the diagnosis.

Cervical ultrasound and scintigraphy are requested to locate the parathyroid origin.

In our study, brown tumors revealed primary hyperparathyroidism in all patients.

Brown tumors regress after removal of the parathyroid lesion causing the hyperparathyroidism [3]. After etiological treatment of primary hyperparathyroidism, surgical excision of a brown tumor is rarely indicated, except for slow regression of a large tumor causing functional discomfort and unsightly facial deformity [7], as in the case of our 4 patients.

Our clinical cases highlight the importance of phosphocalcic assessment to detect primary hyperparathyroidism before the onset of a brown tumor.

Conclusion

These 9 clinical cases illustrate the importance of phosphocalcic assessment in any bone swelling suggestive of a brown tumor.

Brown tumors are rare bone manifestations revealing primary hyperparathyroidism. Their discovery requires exploration of the parathyroid glands, which are most often the site of an adenoma.

The diagnosis of primary hyperparathyroidism allows avoiding surgery on brown tumors, which should regress after excision of the parathyroid lesion.

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