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Case Report

Diffuse Thyroid Lipomatosis: 2 Cases Report

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Abstract

Thyroid lipomatosis is a rare disease, characterized by diffuse infiltration of the stroma by mature adipose tissue, leading to increased size of thyroid gland. The pathophysiology of diffuse proliferation of adipose tissue in the thyroid gland is unclear. Our study involves 2 cases with thyroid lipomatosis treated in surgical department B, Ibn Sina University Hospital. In the 2 cases studied, the average age was 50 years and the 2 patients were female. The 2 patients had consulted for a cervical swelling and the physical examination had found a goiter in both patients. They were treated with total thyroidectomy, and the postoperative follow-up was simple, with no deplorable complications. Pathological examination of the surgical specimen showed infiltration of the entire thyroid parenchyma by mature adipocytes, without any sign of hyperplasia, malignancy or amyloid deposition. Diffuse thyroid lipomatosis is considered a rare condition with about 20 cases described in the literature. This entity has no malignant evolutionary potential and the complications are of a mechanical nature.

Keywords: Thyroid, Lipomatosis, rare, thyroidectomy, histology.

INTRODUCTION

Diffuse thyroid lipomatosis is an entity characterized by extensive infiltration of the thyroid gland by mature adipose tissue resulting in a significant increase in the size of the thyroid [1].

It is an extremely rare entity, about twenty cases have been reported in the literature [2]. It is a benign lesion whose pathophysiological mechanism remains unknown to date [4].

The diagnosis of diffuse thyroid lipomatosis is a purely histological diagnosis which is made postoperatively by histopathological examination.

Our study concerns 02 cases of diffuse thyroid lipomatosis diagnosed in the surgery department B in collaboration with the pathological anatomy department of Ibn Sina University Hospital in Rabat.

Our work aims to study the different epidemiological, clinical and anatomo-pathological as well as the therapeutic and evolutionary modalities of diffuse thyroid lipomatosis.

FIRST CASE

Our first patient is 55 years old, married and mother of a child, housewife, living in Rabat, with no particular history.

Hospitalized for anterior cervico-basic swelling associated with dysphonia dating back for more than 6 months. Clinical examination of the cervical region reveals a large goiter with a painless mass of firm consistency on palpation.

Lymph node examination is without peculiarities. Thyroid ultrasound revealed a diffuse goiter with heterogeneous echogenicity classified as TIRADS 3. No cervical lymph nodes were observed.

The iodine 123 scintigraphy showed a very heterogeneous uptake of goiter by the coexistence of several cold nodules and a few hot nodules throughout the thyroid parenchyma.

The thyroid hormones came back normal. The treatment consisted of a total thyroidectomy with preservation of the parathyroid glands and the two recurrent laryngeal nerves.

Macroscopic examination of the surgical specimen showed that the right lobe measures 5.5×3.5×3 cm with 2 nodules of colloidal appearance, while the left lobe measured 4×2.5×2.2cm. The thyroid isthmus measured 1.5 × 1 cm.

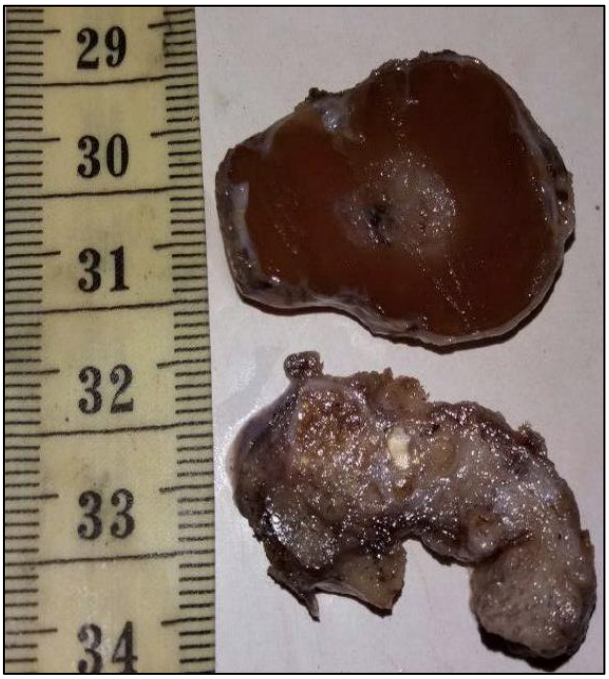

Figure 1: Macroscopic appearance of the surgical specimen showing the presence of a few adipose nodules

Microscopic examination of the surgical specimen showed infiltration of entire thyroid parenchyma by mature adipocytes, with no evidence of hyperplasia, malignancy, or amyloid deposition.

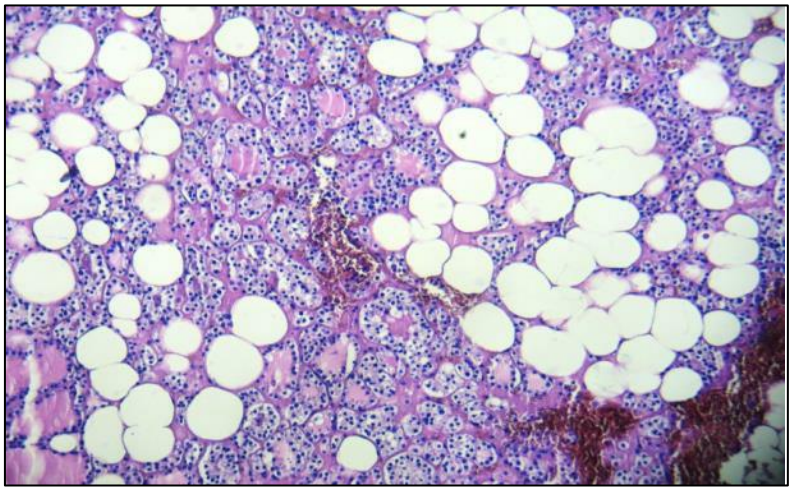

Figure 2: Histological study showing a few thyroid follicles with massive adipose infiltration

The diagnosis of diffuse thyroid lipomatosis was therefore confirmed. The postoperative course was simple. The evolution after one year was without peculiarities.

SECOND CASE

Our second patient is 45 years old, married and mother of a child, living in Salé, hospitalized for anterior cervico-basic swelling, with a history of rheumatoid arthritis under immunosuppressant.

The clinical examination reveals an anterior cervico-basic tumefaction of soft, regular consistency, mobile on swallowing without any sign of complication and without cervical lymphadenopathy.

Cervical ultrasound shows a homogenous goiter, probably sinking, classified TIRADS 2 with absence of suspicious-looking cervical lymphadenopathy.

A cervico-thoracic CT performed shows an enlarged, heterogeneous thyroid gland, arriving at the height of the root of the brachiocephalic arterial trunk.

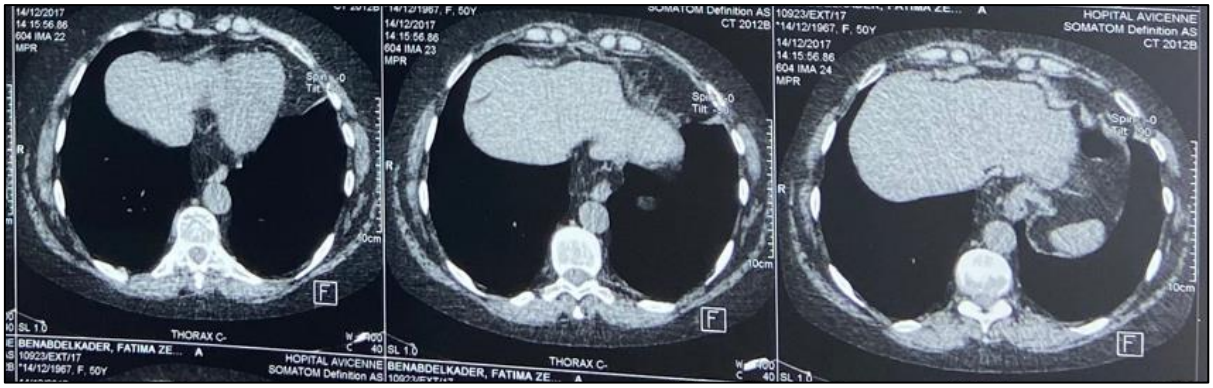

Figure 3: CT image showing sinking goiter

His biological tests, particularly thyroid, was without abnormality.

The patient underwent a total thyroidectomy, with respect for the parathyroids and the recurrent nerves.

The anatomo-pathologic study showed on macroscopic examination a thyroid weighing 242g, right lobe measures: 8×6×3.5cm, left lobe measures: 14×6×4.5cm, isthmus measures: 5.5×2.8cm.

On microscopic examination, the thyroid parenchyma has a strongly altered general architecture, made up of vesicles of variable size. These vesicles are filled with a lightly colored colloidal substance and dissociated by fatty lobules made up of mature adipocyte cells without atypic nucleus. Diffuse thyroid lipomatosis was therefore confirmed.

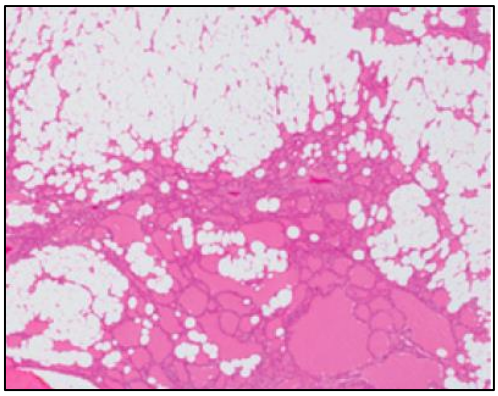

Figure 4: Infiltration of the thyroid parenchyma by mature adipocytes

The patient complained postoperatively from tingling numbness associated with dysphonia with hypocalcemia at 58 mg/L, successfully treated.

After 6 months of follow-up, the patient claimed a favorable clinical and biological evolution.

DISCUSSION

Diffuse thyroid lipomatosis is an extremely rare entity1which was first described by DHAYAGUE3 in 1942.

It is one of the follicular adenomas and is considered the most frequent entity of adipose tumors of the thyroid.

The diagnosis of diffuse thyroid lipomatosis is based on the clinical examination and medical imaging techniques, but is confirmed postoperatively by histopathological examination.

These lesions have been the subject of a few studies:

- Given their rarity (less than 25 cases described).
- Given their benign character.

Diffuse thyroid lipomatosis is a benign thyroid tumor. It is a rare histopathological entity which represents less than 1% of thyroid tumors. Dhayagude was the first to observe this entity in 1942 [6]. Bell *et al.*, reported in 2016 a case of diffuse thyroid lipomatosis with a literature review of 20 cases [5]. Since 2016, 4 new cases of LTD have been reported.

The average age of onset of diffuse thyroid lipomatosis is around the fifth decade in the 23 cases published in the literature [9-14].

This is consistent with the results of our study where the average age was 50 years, ranging from 45 to 55 years.

All previous studies show a sex ratio close to 1. In our study, the 02 cases recorded were of women.

Histogenesis is thought to be either due to heterotopia of adipocytes during thyroid embryogenesis, or due to metaplasia or adipocyte involution of fibroblasts in the thyroid stroma. The association with amyloidosis and renal failure was reported in 3 cases.

Lau *et al*., recently published a case of diffuse thyroid lipomatosis whose immunohistochemical study showed a deletion of the B subunit of succinate dehydrogenase (SDH) in adipose cells. This discovery may play a key role in understanding the pathophysiology of this fatty infiltration of the thyroid [7].

The ultrasonographic appearance remains poorly described, however the most reported ultrasonographic presentation in the literature is as follows: thyroid gland increased in size, regular contours, homogeneous echostructure, increased echogenicity, without microcalcifications or cervical lymphadenopathy.

On Doppler: the LTD appears mainly normovascular. The cervicothoracic CT, not only characterizes the endothoracic extension of the goiter, but can also show diffuse infiltration of the thyroid gland by fatty tissue.

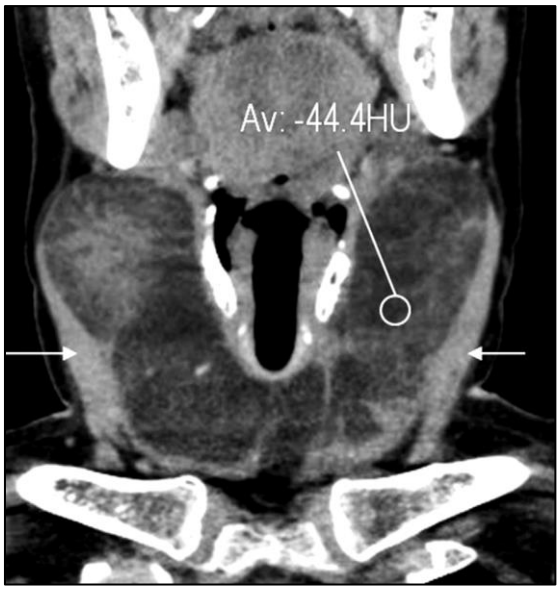

Figure 5: CT image showing a large thyroid gland with diffuse infiltration by fatty tissue

Anatomopathological examination with histological study of the surgical specimen is the only way to confirm the diagnosis of thyroid lipomatosis.

Diffuse thyroid lipomatosis presents as an enlarged thyroid gland with a bumpy surface and soft consistency.

When cut, the appearance is homogeneous and particularly greasy, finely lobulated, without suspicious nodules. The microscopic study is the capital examination that definitively establishes the diagnosis of diffuse thyroid lipomatosis [8]. The histological characteristics are as follows: a thyroid parenchyma with a highly altered architecture, the presence of patches and lobules of mature adipocytes, the absence of nuclear atypia, the absence of signs of hyperplasia and the absence of signs of malignancy. This is compatible with the histological examination obtained in our patients.

Immunohistochemical study of succinate dehydrogenase subunits during diffuse thyroid lipomatosis shows the over expression of SDHA subunit in follicular cells and loss of expression of SDHB subunit in follicular cells [7, 15]. In our case, no immunohistochemical study was performed.

The treatment of diffuse thyroid lipomatosis is exclusively surgical and consists of a total thyroidectomy.

None of the twenty-four cases published in the literature presented a recurrence after surgical treatment. Biological complications are frequent, in

particular hypocalcemia and hypothyroidism. No deaths were recorded in these patients.

CONCLUSION

Diffuse thyroid lipomatosis refers to the presence of fat cells in the thyroid parenchyma, the latter is considered a very rare pathology affecting both sexes equally with an average age of 50 years.

The pathophysiological mechanism of this fatty infiltration of the thyroid gland remains unknown to date.

The rapid enlargement in size that this lesion can reach requires knowledge of this entity.

The diagnosis of diffuse thyroid lipomatosis is based on the clinical examination and medical imaging techniques, but confirmed by the anatomopathological study of the surgical specimen.

The treatment must be started quickly in order to avoid complications which are essentially of a mechanical nature. It is surgical, and it consists of a total thyroidectomy. It is a common intervention with generally simple post-operative consequences.

Data Availability Statement

The data that support the findings of this article are available from the corresponding author upon reasonable request.

Conflicts of Interest:

Drs Jihane Sabar, Abdellah Moufid, Moustapha Traore and Jalil Medarheri declare no conflict of interest.

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