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Thyroid Tuberculosis Discovered on Histopathology Following Total Thyroidectomy: A Case Report

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Abstract **Case Report**

Thyroid tuberculosis is a rare clinical entity [1], even in endemic regions. Its presentation as a large plunging (retrosternal) goiter with normal thyroid function is exceptional and may mimic multinodular goiter or thyroid malignancy. We report the case of a 33-year-old woman with no significant past medical history who presented with a voluminous plunging goiter. Total thyroidectomy was performed for compressive symptoms. Histopathological examination revealed multinodular hyperplasia associated with epithelioid granulomatous inflammation and caseous necrosis, consistent with thyroid tuberculosis. This case highlights the diagnostic challenge of thyroid tuberculosis and underlines the importance of histopathological examination in atypical thyroid disease.

Keywords: Thyroid tuberculosis, total thyroidectomy, histopathology, anti-tuberculosis therapy, case report.

INTRODUCTION

Tuberculosis (TB), caused by *Mycobacterium tuberculosis*, remains a major public health issue worldwide [2]. However, thyroid involvement is extremely rare, even in endemic countries. The rarity of thyroid tuberculosis has been attributed to the bactericidal properties of colloid, high iodine content, and the rich vascular supply of the gland [3].

Clinical presentation is highly variable and non-specific, often mimicking multinodular goiter, thyroid carcinoma, or subacute thyroiditis [4]. Diagnosis is rarely established preoperatively and is most often made after histological examination of the surgical specimen.

CASE PRESENTATION

A 33-year-old woman with no past medical history (no diabetes, hypertension, autoimmune disease, or prior tuberculosis exposure) presented with a progressively enlarging anterior neck mass over six months. She reported that the swelling moved upward with swallowing. There were no systemic symptoms such as fever, weight loss, night sweats, or chronic cough. Family history was notable for a goiter in a paternal aunt.

Clinical Examination

Physical examination revealed a stage 2 goiter (WHO classification), large and plunging, with inferior extension into the thoracic inlet. The mass was firm, mobile with swallowing, and non-tender. No cervical lymphadenopathy was detected.

Laboratory Investigations

Thyroid function tests were within normal limits:

- TSH: 0.442 mIU/L
- Free T3: 3.47 pg/mL
- Free T4: 1.34 ng/dL

Calcitonin levels were negative.

- Ultrasound: multinodular goiter, no suspicious features of malignancy
- FNAC: According to the 2023 Bethesda System for Reporting Thyroid Cytopathology, the lesion is classified as “Benign” (Category II).

Figure 1: Cervical ultrasound showing a multinodular goiter classified as TIRADS 3

Imaging

Cervicothoracic CT scan demonstrated a markedly enlarged thyroid gland measuring approximately 82 × 63 × 112 mm. The goiter extended 17 mm into the thorax.

Mass effect findings included:

- Rightward deviation of the trachea (normal caliber)
- Mild displacement and narrowing of the hypopharynx
- Lateral displacement of cervical vascular structures without functional compromise

Given the compressive features and significant retrosternal extension, total thyroidectomy was indicated.

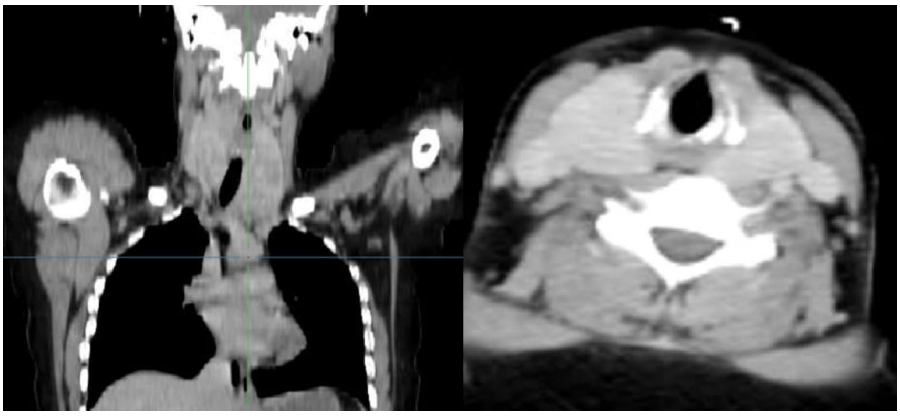

Figure 2: Cervico-thoracic CT scan (coronal and axial views) demonstrating an enlarged thyroid gland with substernal extension causing tracheal deviation and compression

The patient underwent a total thyroidectomy under general anesthesia. The postoperative course was uneventful, with no complications reported.

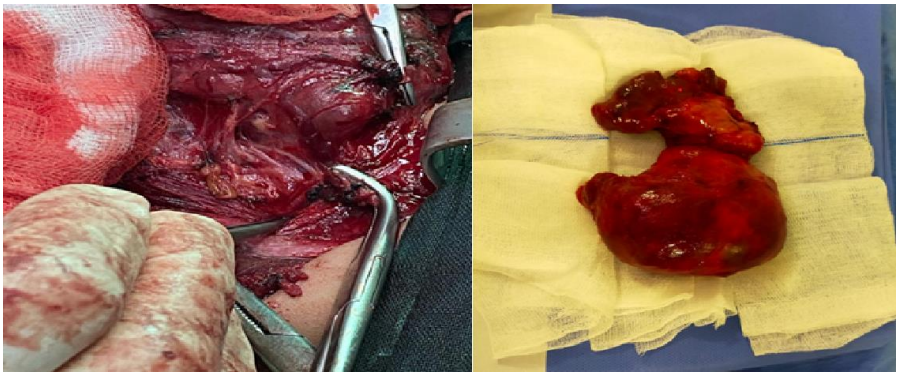

Figure 3: Intraoperative view showing total thyroidectomy with careful dissection and identification of the recurrent laryngeal nerve and preservation of the parathyroid glands

Pathological Findings

Macroscopic Examination

The thyroid gland was markedly enlarged:

- Right lobe: 9 × 5 cm
- Left lobe: 10 × 5 cm
- Isthmus: 3 × 2 cm

Microscopic Examination

Histological analysis revealed multinodular hyperplasia characterized by nodules of varying size separated by fibrous septa and filled with dense colloid. No malignant features were identified.

Importantly, a single epithelioid granuloma with central caseous necrosis was observed. No vascular emboli were present.

These findings were consistent with granulomatous thyroiditis with caseous necrosis, highly suggestive of thyroid tuberculosis.

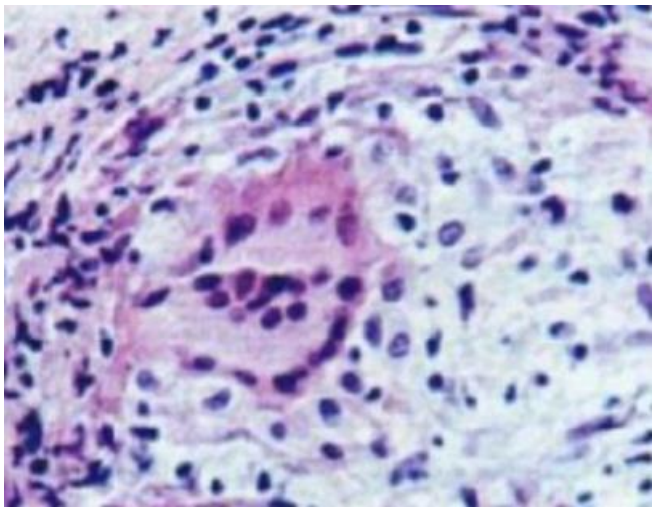

Figure 4: Granulomatous inflammation with epithelioid cells and probable caseous necrosis

DISCUSSION

Thyroid tuberculosis is rare, accounting for less than 1% of thyroid pathologies, even in regions where TB is endemic [5]. It may occur as part of disseminated tuberculosis or, more rarely, as isolated thyroid involvement.

Clinical manifestations vary widely and may include:

- Solitary thyroid nodule
- Multinodular goiter
- Cold abscess
- Compressive goiter
- Suspicion of thyroid malignancy

Thyroid function is typically normal, although hypothyroidism or hyperthyroidism has been reported in some cases [6].

Radiological findings are non-specific. Fine-needle aspiration cytology (FNAC) may suggest granulomatous inflammation but does not always identify caseous necrosis or acid-fast bacilli, leading to diagnostic uncertainty [7].

Histopathological examination remains the gold standard for diagnosis [8]. The presence of epithelioid granulomas with caseous necrosis strongly supports tuberculosis, especially in endemic areas. Differential diagnoses include:

- Subacute (De Quervain) thyroiditis
- Sarcoidosis
- Fungal infections
- Granulomatous autoimmune thyroiditis

In our patient, the diagnosis was incidental following surgery performed for compressive multinodular goiter. Management of thyroid tuberculosis primarily consists of standard anti-tubercular therapy [9]. Surgery is reserved for compressive symptoms, abscess drainage, or diagnostic uncertainty [10].

CONCLUSION

This case illustrates an uncommon presentation of isolated thyroid tuberculosis revealed by a large plunging multinodular goiter in a young woman without prior medical history. The diagnosis was established only after histopathological examination of the thyroidectomy specimen.

Although rare, thyroid tuberculosis should be considered in the differential diagnosis of atypical goiter, particularly in endemic regions. Histopathological evaluation remains essential for definitive diagnosis, and appropriate anti-tubercular therapy ensures favorable outcomes.

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