

Letter to the Editor

Thyroid tuberculosis: A new case and review of the literature



Tuberculose thyroïdienne : une nouvelle observation et revue de la littérature

Keywords: Thyroid; Tuberculosis; Nodule; RT-PCR; FNAC

1. Introduction

Thyroid gland tuberculosis is extremely uncommon [1]. The first case was reported by Lebert in 1862 in a young woman who died from miliary tuberculosis [2]. Thyroid tuberculosis (TT) is difficult to diagnose: clinical, radiological and biological analyses are required to confirm diagnosis.

2. Patient

A 32-year-old male presented with a weight loss and a persistent cough over the previous few months. The patient was from Thailand and his family history was significant for tuberculosis in the parents, a brother, an aunt and his grandmother. His physical examination was unremarkable but a tuberculin skin test was positive (20 mm).

The chest computed tomography showed pulmonary nodes suggestive of miliary and cervicothoracic nodes. Gram stains on an expectoration were negative. A rapid PCR assay MTB/RIF GeneXpert® (Cepheid, Sunnyvale, CA) on the expectoration was positive for *Mycobacterium tuberculosis* complex. Bacteriological cultures were positive for *Mycobacterium tuberculosis*. Antibiotic testing by PCR revealed sensitivity to rifampicin and isoniazid. The patient was started on triple-therapy comprising rifampicin, isoniazid and pyrazinamid. Ethambutol treatment was not prescribed because the familial *Mycobacterium tuberculosis* strain was susceptible to the first line drugs.

After 3-week treatment, the patient still suffered from an unproductive, dry cough without fever. He reported painful symptoms in his anterior cervical area. The clinical examination revealed a right intern sub-clavicular adenopathy and a painful hyperplasia of the right thyroid lobe.

Laboratory testing showed hyperleucocytosis (10.7 G/L), with an increase of neutrophil polynuclear, elevated C-reactive protein (24 mg/L) and erythrocyte sedimentation rate (30 mm at

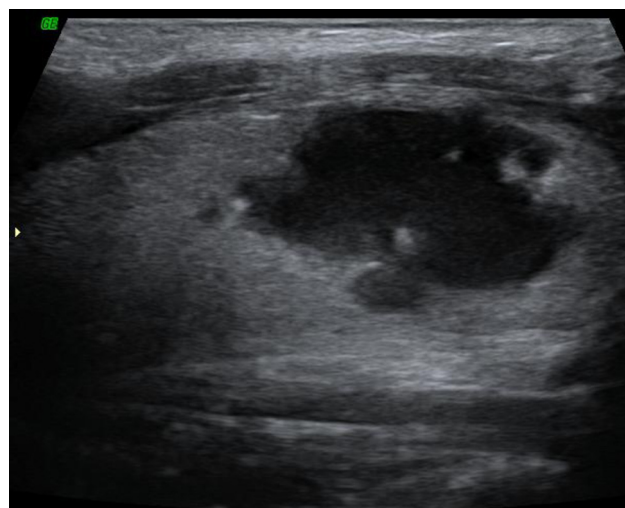


Fig. 1. Ultrasound longitudinal view of right thyroid nodule.

first hour). Serum TSH was 0.49 mU/L (normal range 0.3–4.2 mU/L). A chest X-ray showed apical segmentar atelectasia related to hypertrophy of the right inter-tracheobronchial node. Cervical ultrasound examination showed a 14 × 17 × 19 mm cystic nodule of the right thyroid lobe and necrotic right cervical nodes. The contours were irregular, infiltrating the surrounding thyroid tissue. Echostructure was hypoechogenous without any vascular Doppler signal and no calcification (Fig. 1). Cytology examination on fine-needle aspiration cytology (FNAC) revealed necrosis and inflammation, with infiltration of neutrophil polynuclears and macrophages. The specimen did not show acid-fast bacilli (AFB) at microscopy. All standard bacteriological cultures were sterile. On the aspirated nodule, a *Mycobacterium tuberculosis* specific geneXpert RT-PCR assay was performed and showed a positive result confirming the thyroid tuberculosis. No resistance to rifampicin was detected by PCR assay.

After 3 months of the triple-therapy regimen, the treatment was simplified to a bitherapy regimen of rifampicin and isoniazid for 6 months. Clinical monitoring showed a significant reduction of all initial symptoms.

3. Discussion

To our knowledge, this is the first case of thyroid tuberculosis reported in France. Thyroid tuberculosis is a rare disease with

less than 200 cases reported [3]. According to Ghosh et al.'s review, the prevalence of thyroid tuberculosis is 0.1–0.3% [4]. Several hypothesis may explain its rarity: the high blood flow in thyroid tissue, the bactericidal action of colloid material, the presence of iodine and the antituberculous activity of thyroid hormones [5,6].

Thyroid tuberculosis may be isolated or associated with a disseminated disease [3,5]. In this case, miliary pulmonary tuberculosis was associated with thyroid and cervical nodes. *Mycobacterium tuberculosis* was found in respiratory and thyroid specimen. Tuberculosis may be disseminated to thyroid from adjacent organs directly or by hematogenous route. In this case, the thyroid gland was probably affected by a contiguous effect.

Clinical diagnosis of thyroid tuberculosis is difficult because symptoms are variable and non specific [3,5]. When patients present with a unique nodule, it may be associated with pain or tenderness. Specific symptoms are rarely associated in cases of disseminated tuberculosis.

We report a patient with miliary tuberculosis associated with thyroid tuberculosis with no symptoms of thyroid dysfunction. The thyroid function test was normal. Dysfunction of the thyroid gland in thyroid tuberculosis is rarely reported: in most cases, thyroid function is normal [7], only 3 cases of hypothyroidism have been described [5,8], and one patient presented transient thyrotoxicosis preceding hypothyroidism [8].

Post-surgical histological findings have described epithelioid cell granulomas with central caseous necrosis, peripheral lymphocytic infiltration and multinucleated giant cells (Langhans giant cells) [1,9]. To make a preoperative thyroid tuberculosis diagnosis, imaging procedures such as cervical ultrasound and thyroid scintigraphy are useful [10]. Other diagnostic tests may assist in the diagnosis, such as sputum analysis, ESR and blood count. FNAC is described as the best method for a cytological and bacteriological examination [11]. In our case, direct examination and culture were negative probably because specific treatment was started before thyroid evaluation, but the patient's RT-PCR was positive for *Mycobacterium tuberculosis*.

The differential diagnoses of thyroid tuberculosis encompass all thyroid diseases. When the patient suffers from anterior cervical pain, diagnosis may include an infectious thyroiditis or a subacute granulomatous thyroiditis. A granulomatous inflammation of the thyroid may be caused by granulomatous thyroiditis, palpation thyroiditis, fungal infection, sarcoidosis, granulomatous vasculitis, or a foreign body reaction. Thyroid tuberculosis should be differentiated from thyroid malignancy but these two conditions may coexist.

Classic treatment of thyroid tuberculosis has been based on antituberculous drugs associated with surgical drainage or removal of parts of the thyroid gland. At the present time, only an antituberculous treatment is recommended and is sufficient for complete resolution [12]. Drainage or a surgical resection is required in the case of thyroid tuberculosis associated with a large abscess. Treatment failure is rare and is usually due to bacterial resistance. In this case, treatment associated isoniazid,

rifampicin, pyrazinamide. Oral corticosteroid therapy was chosen to treat symptoms of lung segmentar atelectasia, and cervical painful with dysphagia. After 3 months of this treatment, the clinical and radiologic chest signs and symptoms were satisfactorily resolved. Evaluation of thyroid function may be performed during and after treatment, especially to verify normal thyroid function [5].

In conclusion, thyroid tuberculosis is rare and this diagnosis should be taken into consideration in non-endemic countries for tuberculosis especially during evaluation of patients with thyroid masses.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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