

# HYPERTHYROIDISM TRIGGERED BY THYROID ABSCESS: A CASE REPORT

## HYPERTHYROÏDIE DÉCLENCHÉE PAR UN ABCÈS THYROÏDIEN: À PROPOS D'UN CAS

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### ABSTRACT

**Introduction:** Thyroid abscesses are uncommon because the gland is relatively resistant to developing infection due to its rich blood supply, well-developed capsule and high iodine content. However, clinicians must be aware of this differential to make an early diagnosis.

**Presentation of case:** This case study involves a 16-year-old young man with a history of painful swelling over the neck accompanied by fever without any underlying cause. Both the ultrasound and computed tomography revealed a heterogeneous mass within the left lobe of the thyroid gland. Fine needle aspiration revealed an abscess collection and culture *Aerococcus viridans* had grown. She was successfully treated with intravenous antibiotics and no surgical treatment was carried out.

**Conclusion:** Thyroid abscess is an uncommon diagnosis but can lead to significant morbidity. Therefore, clinicians must be aware of the diagnosis in order to institute early aggressive management.

**Keywords:** Thyroid, Ultrasound, Abscess, Hyperthyroidism, Hormone

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### RÉSUMÉ

**Introduction:** Les abcès thyroïdiens sont rares, car la glande est relativement résistante aux infections grâce à sa riche vascularisation, à sa capsule bien développée et à sa forte teneur en iode. Cependant, les cliniciens doivent connaître ce diagnostic différentiel afin de poser un diagnostic précoce.

**Présentation du cas:** Nous rapportons le cas d'un jeune homme de 16 ans présentant une tuméfaction cervicale douloureuse associée à de la fièvre, sans cause sous-jacente évidente. L'échographie et la tomodensitométrie ont mis en évidence une masse hétérogène au sein du lobe gauche de la glande thyroïde. La ponction à l'aiguille fine a révélé une collection abcédée, et la culture a isolé *Aerococcus viridans*. Le patient a été traité avec succès par antibiothérapie intraveineuse, sans recours à un traitement chirurgical.

**Conclusion:** L'abcès thyroïdien est un diagnostic peu fréquent mais peut être responsable d'une morbidité importante. Les cliniciens doivent donc y penser afin d'instaurer une prise en charge précoce et agressive.

**Mots-clés:** Thyroïde, Échographie, Abcès, Hyperthyroïdie, Hormone.

### INTRODUCTION:

Thyroid abscess is a rare condition, accounting for less than 0.7% of thyroid surgical pathologies [1], owing to the gland's rich vascularization and lymphatic drainage, high iodine content, protective fibrous capsule, and anatomical separation from surrounding cervical structures [2]. Clinically, it usually presents with fever associated with an anterior neck swelling, and diagnosis relies on clinical findings, imaging, fine-needle aspiration, and laboratory investigations [3]. Early diagnosis and management are essential to prevent severe complications such as septicaemia, vocal cord paralysis, retropharyngeal

abscess, and suppurative mediastinitis [4]. To our knowledge, this is the first reported case in the literature of acute hyperthyroidism triggered by a thyroid abscess.

### CASE REPORT:

A 16-year-old young patient without pathological history who presented to our otorhinolaryngology emergency unit with painful anterior cervical swelling, slightly lateralized to the left (Figure 1), moving on swallowing, associated withodynophagia, fever and night sweats for 4 days.



Figure 1: Anterior cervical swelling, slightly lateralized to the left (red arrow)

He had a febrile state of 39°C and the physical examination had showed a left-sided thyroid swelling that was warm and tender of 5 cm. The inspection of the neck skin revealed erythema toward the midline of the neck but no cervical lymphadenopathy was present. The Nasofibroscopy revealed left vocal cord paresis. Blood investigations revealed a leukocytosis of 32,710/ $\mu$ L with neutrophilic predominance, a C-reactive protein (CRP) level of 231 mg/L and thyroxine (T4) levels were raised at 45 pmol/l (normal range 10–23 pmol), thyroid stimulating hormone (TSH) was low at 0.01 mIU/litre (normal range 0.5–5 uIU/l), suggestive for thyrotoxicosis. Antibodies anti-thyroperoxidase, anti-thyroglobulin, and anti-TSH receptor were within the normal range, and the patient had no family history of thyroid disease. Cervical CT scan (Figure 2) showed a mass occupying the left lobe of the thyroid gland, with fluid content, measuring 30\*50\*67 mm with no evidence of mediastinitis.



Figure 2: Cervical CT scan in axial (A) and coronal section (B) show the thyroid abscess (red arrow)

The patient underwent two evacuative fine needle aspirations, yielding a total of 80 cc of frank pus, which was sent for bacteriological analysis. Cytobacteriological examination showed *Aerococcus viridans*. Tuberculosis investigations including PCR testing for *M. tuberculosis* DNA were negative. A screening for HIV infection and immunoglobulin deficiency was conducted, but no significant findings were observed. The management was medical and included parenteral triple antibiotic (vancomycin and cefotaxime for 21 days, combined with metronidazole for 10 days) and anti-thyroid synthesis therapy with good evolution. The patient was discharged after one month of hospitalization, under oral antibiotic therapy combined with anti-thyroid synthesis therapy. He responded to antibiotic treatment and did not require any surgical drainage as her fever and pain settled. Euthyroidism was restored in the patient following a four-month course of treatment. The vocal cord paralysis was transient and completely resolved on follow-up nasofibroscopy. The follow-up Cervical ultrasound was normal. The timeline of thyroid function and inflammatory markers is described in (Table 1).

Table 1. Evolution of thyroid function tests and inflammatory markers during treatment

Time	Day 0 (start of antibiotic treatment)	Day 3 (Evacuative fine needle aspiration)	Day 14	Day 21	Day 120
TSH (n.v. 0.5 – 5)	< 0.01	–	–	0.6	2.46
FT4 (pmol/L, n.v. 10 – 23)	45	–	–	12	17.3
CRP (mg/L, n.v. < 5)	231	196	56	10	4

Abbreviations: TSH = thyroid-stimulating hormone; FT4 = free thyroxine; CRP = C-reactive protein.

## DISCUSSION:

Thyroid abscess is a rare clinical entity, primarily due to the gland's inherent resistance to infection, supported by its rich vascularity, lymphatic drainage, and high iodine content. In most cases, it occurs in immunocompromised individuals or in the context of underlying thyroid pathology or congenital anomalies such as a persistent thyroglossal duct or a piriform sinus tract. Interestingly, no such anatomical or pathological abnormalities were identified in the present case, making it a diagnostic and therapeutic challenge.

Thyroiditis encompasses a broad spectrum of inflammatory conditions [5]. Among them, acute suppurative thyroiditis—although uncommon—can lead to the formation of intrathyroidal abscesses if the infection progresses unchecked [6]. The clinical presentation can be misleading, as early symptoms often mimic upper respiratory infections, with anterior neck pain, fever, and odynophagia. In more advanced cases, cervical skin erythema may also be observed. These non-specific symptoms often result in delayed diagnosis, underlining the importance of clinical vigilance, particularly when inflammatory markers



such as leukocytosis and elevated Erythrocyte Sedimentation Rate (ESR) are present [7].

An initial phase of hyperthyroidism may arise due to the destruction of thyroid tissue, leading to a significant release of thyroid hormones[8]. This may later progress to hypothyroidism following complete parenchymal loss. The coexistence of hyperthyroidism and a thyroid abscess, as observed in our case, has not been previously documented in the medical literature [8].

Imaging modalities, especially cervical ultrasound and CT scan, play a pivotal role in detecting abscess formation and evaluating the extent of glandular involvement [7]. Ultrasonography typically reveals a heterogeneous thyroid with hypoechoic or anechoic areas, while CT imaging may show fluid collections with variable contrast enhancement depending on the stage of infection.

Histopathologically, thyroid abscesses demonstrate areas of necrosis, hemorrhage, suppuration, and fibrotic reaction surrounding purulent cavities. Microbiologically, the most frequently isolated organisms include *Staphylococcus aureus* and *Streptococcus pneumoniae*, although less common pathogens such as *Klebsiella spp.*, *Salmonella spp.*, *Acinetobacter*, and *Eikenella corrodens* have also been reported[2,9]. Mycotic infections, though rare, should also be considered in immunocompromised hosts. Empirical antibiotic therapy should initially target gram-positive cocci, with adjustments based on culture results[10]. Standard management typically involves systemic antibiotics combined with surgical drainage, either percutaneously or via a cervical approach [11]. In

selected cases, image-guided aspiration with catheter irrigation and intracavitary antibiotics has shown favorable outcomes [12]. However, in the presence of underlying structural pathology, definitive surgical treatment, such as thyroidectomy, may be necessary to prevent recurrence. Although surgery in an inflamed field is technically challenging due to peri-glandular fibrosis and edema, meticulous dissection allows for a safe and effective procedure [12].

This case emphasizes the need for high clinical suspicion, early imaging, and appropriate antimicrobial coverage. It also reinforces that while some cases may be managed conservatively, others will require surgical intervention to ensure resolution and prevent serious complications such as airway compromise, fistula formation, or systemic spread[11].

## CONCLUSION:

Despite its low incidence, thyroid abscess can have serious clinical consequences, underscoring the importance of timely diagnosis and intervention.

**Consent:** Written informed consent was obtained from the patient for publication of this case report and case series and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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