EJCRIM
European Journal
of Case Reports
in Internal Medicine

REVERSIBLE THYROTOXICOSIS CAUSED BY SUPPURATIVE THYROIDITIS IN A YOUNG HEALTHY WOMAN

Begüm Süeda Sert[1], Roderick F.A. Tummers-de Lind van Wijngaarden[2], Jacqueline Buijs[3]

Department of Internal Medicine, Zuyderland Medical Centre, Heerlen, The Netherlands

Corresponding author's e-mail: b.sert@zuyderland.nl

Received: 05/01/2025
Accepted: 27/01/2025
Published: 10/03/2025

Conflicts of Interests: The Authors declare that there are no competing interests.
Patient Consent: Written informed consent was provided by the patient.
This article is licensed under a Commons Attribution Non-Commercial 4.0 License

How to cite this article: Sert BS, Tummers-de Lind van Wijngaarden RFA, Buijs J. Reversible thyrotoxicosis caused by suppurative thyroiditis in a young healthy woman. *EJCRIM* 2025;**12**:doi:10.12890/2025_005101

ABSTRACT

Introduction: Acute suppurative thyroiditis is a bacterial infection of the thyroid gland. Potential risk factors are an immunocompromised state or the presence of pre-existing thyroid disease. Acute suppurative thyroiditis may be complicated by abscess formation and/or thyrotoxicosis, which are both rare but potentially life-threatening complications.
Case description: We describe a case of acute suppurative thyroiditis secondary to tonsillitis in a 22-year-old healthy female presenting with thyrotoxicosis due to abscess formation. She presented with complaints of palpitations, fever, extreme salivation, dysphagia, pain and swelling of the neck. Further analysis revealed a sinus tachycardia, high inflammatory parameters, and clinical and biochemical signs of thyrotoxicosis. Computed tomography showed abscess formation in the left lobe of the thyroid gland with extension to the retropharyngeal space and deviation of the trachea to the contralateral side. Blood cultures were positive for *Streptococcus constellatus* and *Prevotella intermedia*. The patient was treated with antibiotics and underwent an operative excision and drainage of the abscess and recovered well. Symptomatic thyrotoxicosis was treated with metoprolol. *P. intermedia* has not previously been implicated in causing acute bacterial thyroiditis.
Conclusion: Acute suppurative thyroiditis may occur in healthy young adults without any predisposing factors. Concomitant thyrotoxicosis is rare, but important to diagnose. Bacterial thyroiditis may be either a primary thyroid infection or a secondary complication of a severe tonsillitis. Early recognition and treatment are of great importance to reduce overall mortality and morbidity, and to prevent the development of complications.

KEYWORDS

Acute suppurative thyroiditis, thyroid abscess, retropharyngeal abscess, thyrotoxicosis, tonsillitis

LEARNING POINTS

- Suppurative thyroiditis can lead to overt but potentially reversible thyrotoxicosis.
- Bacterial thyroiditis can occur in healthy young adults, although immune compromised patients and patients with anatomical variants are more susceptible.
- Acute suppurative thyroiditis is usually associated with a euthyroid state.

EFIM
European Federation of Internal Medicine

Publisher
smc media srl

INTRODUCTION

Suppurative thyroiditis, defined as bacterial infection of the thyroid gland, is a rare disease. The degree of vascularisation and the isolated position in the neck region make the thyroid gland less susceptible to infections. Additionally, its rich iodine content has bactericidal, antiviral and antifungal effects[1]. However, bacterial infection of the thyroid may occur and causes symptoms such as fever, swelling, pain, dysphagia or sepsis. Usually, acute suppurative thyroiditis is preceded by a respiratory tract infection or pharyngitis. Normally, thyroid function is not affected by bacterial infections[2].

We present a case of severe hyperthyroidism caused by acute suppurative thyroiditis, complicated by formation of a thyroid abscess, necessitating surgical drainage and antibiotic treatment. Acute suppurative thyroiditis developed secondary to the breakthrough of a retropharyngeal abscess.

CASE DESCRIPTION

A 22-year-old female without a relevant medical history presented to the emergency department. Two weeks prior to presentation, she suffered from an upper respiratory tract infection with tonsillar involvement. She was treated with non-steroidal anti-inflammatory drugs. She was recovering well, but a few days later she developed a painful swelling in the anterior part of her neck on the left side. She did not mention any radiation of the pain, nor any effect of neck flexion or hyperextension on her symptoms. Other symptoms were dysphagia, sore throat, excessive salivation, fever (39.8°C) and palpitations.

On clinical examination she seemed ill, and her voice sounded hoarse; vital parameters were normal, except for a regular tachycardia of 120 beats/minute. An erythematous uvula with small vesicles was observed. The tonsils were normal in terms of colour and size. The thyroid gland was firm, enlarged and painful upon palpation, without redness. The skin was indurated on the left side of the neck and the larynx was shifted to the right side.

Laboratory analysis revealed a high C-reactive protein of 506 mg/l, leucocytosis (leukocytes 20.9 $\times 10^9$/l), parathyroid stimulating hormone (PTH) 2.7 pmol/l, thyroid-stimulating hormone (TSH) <0.01 mU/l and high free thyroxine (T4) 77.1 pmol/l (normal range 11.0–22.0). Computed tomography (CT) of the neck was performed, showing an abscess in the left thyroid lobe with extension to the retropharyngeal space. There were no vascular complications or signs of compression on the tracheal lumen, although the trachea was deviated to the contralateral side *(Fig. 1)*. The hypercalcaemia was secondary to hyperthyroidism and component shift of albumin as an acute phase reaction.

Emergency surgery was carried out, during which the patient underwent excision and drainage of the abscess. She was treated with ceftriaxone 2 grams daily and metronidazole.

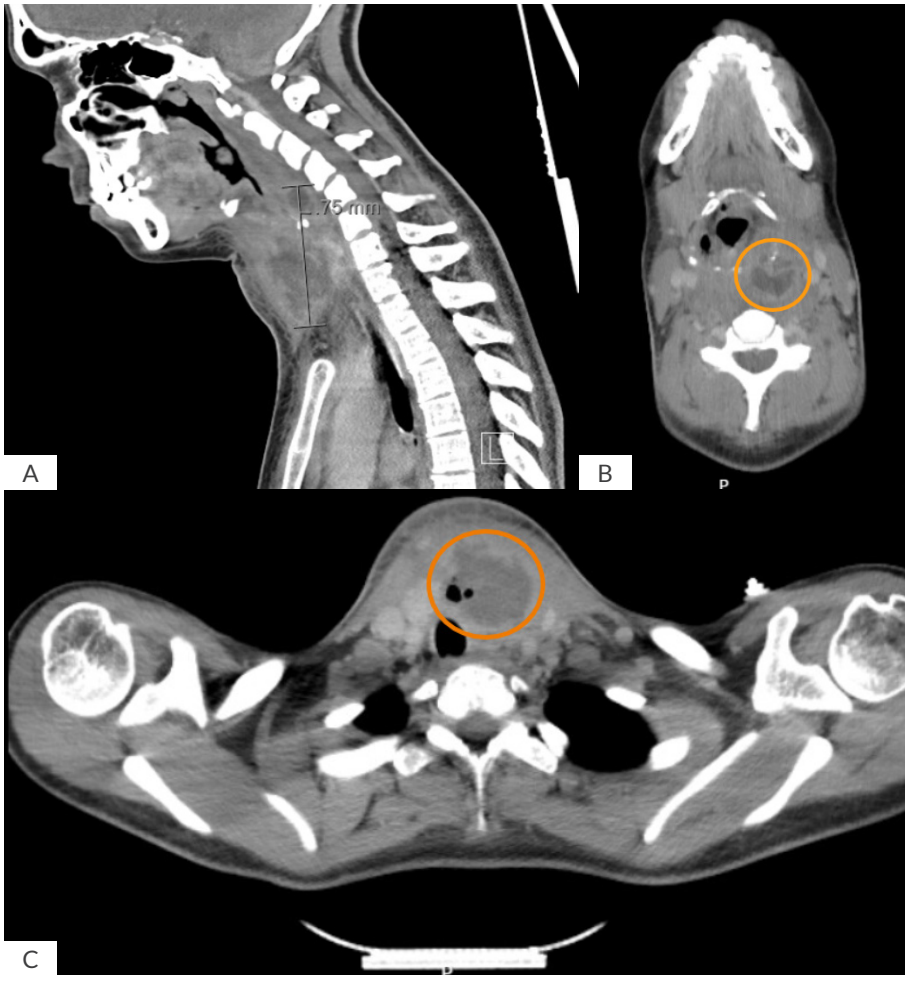


Figure 1. CT scan: A) Sagittal section showing an abscess collection in the left retropharyngeal space and left thyroid lobe; B) Axial section showing abscess collection in the left retropharyngeal space; C) axial section showing abscess collection in the left thyroid lobe and displacement of the trachea to the right side.

Metoprolol was given as symptomatic treatment for her tachycardia. After determination of the abscess cultures (positive for *S. constellatus* and *P. intermedia*), the antibiotic regime was switched to clindamycin orally. Within ten days after incision and drainage of the abscess, thyroid function improved (TSH <0.01, FT4 17.5), without any other treatment. At her two months follow-up visit, TSH was normalised (TSH 2.2).

DISCUSSION

Concerning acute suppurative thyroiditis, immunocompromised patients (especially patients with acquired immunodeficiency syndrome - AIDS, patients receiving chemotherapy or other immunosuppressive agents) or patients with a pre-existing history of thyroid disease (Hashimoto's thyroiditis, thyroid cancer, thyroid nodule) are affected in most cases[2,3]. Anatomical abnormalities within the thyroid gland, including congenital pyriform sinus fistula, may predispose for the development of an acute suppurative thyroiditis[3-5]. In our case, the patient was a healthy adult not known to have pre-existing thyroid disease or an immunocompromised state. A traumatic event to the thyroid gland and anatomical anomalies were excluded. The development of acute suppurative thyroiditis, combined with abscess formation and an overt symptomatic hyperthyroidism is very rare.

Concerning thyroid function, TSH was below the lowest detectable level and free thyroxine was very high, reflecting overt thyrotoxicosis. The patient's complaints of palpitations and sinus tachycardia were attributed to thyrotoxicosis combined with fever due to the bacterial infection. Symptoms of thyrotoxicosis can be treated with a beta blockade or thioamide[6]; this patient could be treated with low-dose metoprolol. Thyrotoxicosis can be provoked by invasion of bacteria in the thyroid gland leading to acute cellular damage, resulting in a massive release of thyroid hormones with clinical thyrotoxicosis[2]. Most case reports in the current literature describe a euthyroid state in patients with an acute bacterial thyroiditis (83.1%) instead of hyperthyroidism as in our patient[2,4-5,7]. On the contrary, hypothyroidism may be encountered in cases with a fungal pathogen[5].

The bacteria isolated from blood cultures of our patient were *Streptococcus constellatus* and *Prevotella intermedia*. *Prevotella intermedia* is a Gram-negative bacterium associated with acute necrotising gingivitis. *S. constellatus* is a species of the *S. anginosus* group, which is a subspecies of the viridans streptococci species. Abscess formation as a complication of an *S. anginosus* infection is common. However, bacteria usually isolated from blood cultures from patients with acute suppurative thyroiditis are *Staphylococcus aureus*, *Streptococcus pyogenes*, *Streptococcus pneumoniae* and *Staphylococcus epidermidis*. The number of case reports regarding acute suppurative thyroiditis is limited, since this is a very rare condition. Only six cases of acute suppurative thyroiditis caused by *S. anginosus* are described in the literature. Moreover, this is the first report to reveal that the bacterium *P. intermedia* may be involved in acute suppurative thyroiditis. Nonetheless, the infection was treated by urgent abscess drainage and broad-spectrum antibiotics, thereby preventing potential life-threatening complications[7-10].

CONCLUSION

Acute bacterial thyroiditis is a rare and potentially life-threatening disease, even in immunocompetent young patients. Early recognition and immediate treatment in terms of abscess drainage and broad-spectrum antibiotics are essential to reduce adverse outcomes. In case of thyrotoxicosis, symptomatic treatment is indicated due to the high chance of total recovery when the suppurative thyroiditis is treated appropriately.

To our knowledge this is the first case of overt and self-limiting thyrotoxicosis as a complication. Furthermore, one of two pathogens (*P. intermedia*) has not previously been implicated in causing acute bacterial thyroiditis.

REFERENCES

1. Ngo D, Aftab G, Madhavan A, Bukhari A. Idiopathic pulmonary vein thrombosis treated with apixaban. *Respirol Case Rep* 2021;**9**:e00803.
2. Selvidge SD, Gavant ML. Idiopathic pulmonary vein thrombosis: detection by CT and MR imaging. *AJR Am J Roentgenol* 1999;**172**:1639–1641.
3. Komatsu S, Kamata T, Imai A, Miyaji K, Ohara T, Takewa M, et al. Idiopathic pulmonary vein thrombosis complicated with old myocardial infarction detected by multidetector row computed tomography. *J Cardiol Cases* 2011;**3**:e94–e97.
4. Goddard SA, Tran DQ, Chan MF, Honda MN, Weidenhaft MC, Triche BL. Pulmonary vein thrombosis in COVID-19. *Chest* 2021;**159**:e361–e364.
5. Mumoli N, Cei M. Idiopathic pulmonary vein thrombosis. *J Emerg Med* 2012;**42**:182–183.