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Idiopathic thyroid abscess



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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: We present the case of a patient who required urgent operative resection as definitive treatment for a thyroid abscess secondary to infection with *Staphylococcus aureus*.

DISCUSSION: Although this is rare, a thyroid abscess left untreated can lead to serious morbidity. Therefore, clinicians must be aware of the presenting features and therapeutic options.

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.

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1. Introduction

The thyroid gland is relatively resistant to developing infection due to its rich blood supply, well-developed capsule and high iodine content.^{1–3} Coupled with the ready availability of modern antibiotics, these factors render thyroid abscesses uncommon in modern practice. They account for less than 0.7% of surgical pathology in the thyroid gland.¹

When they occur, however, they may lead to significant morbidity including a thyroid storm,^{4,5} airway obstruction,^{4,6} internal jugular vein thrombosis^{4,7} and generalized sepsis.^{4,8} Since an early diagnosis is needed to minimize morbidity, clinicians should entertain thyroid abscess as a differential in patients who present with acute neck swelling. We present a case of a patient with an idiopathic thyroid abscess and review the clinical features of this pathology.

2. Report of a case

A 60 year old man experienced fever, odynophagia and a painful right-sided neck swelling for 3 days. He had no known medical illnesses, history of neck trauma, pre-existent thyroid disease or symptoms suggestive of upper respiratory tract infection.

Apart from a low grade pyrexia at 99.5 °F, his vital signs were normal: heart rate 88 beats per minute, blood pressure 142/89 and respiratory rate of 18 breaths per minute. Examination of the neck revealed the presence of a right-sided thyroid swelling that was warm and tender (Fig. 1). Close inspection of the skin

revealed erythema toward the midline of the neck (Fig. 2) but no cervical lymphadenopathy was present. Blood investigations revealed a leukocytosis at $18,000 \times 10^6/L$. Neck sonography confirmed the presence of a complex cystic lesion in the right lobe with approximately 75 ml of heterogenous material. The absence of cervical lymphadenopathy was confirmed on neck ultrasound. Empiric antibiotics were commenced and the patient was taken to the operating room for definitive management.

A Kocher's transverse neck incision was used to expose the isthmus and right lobe of the thyroid (Fig. 3). The right lobe was enlarged and prevented visualization of the recurrent laryngeal nerve and external branch of superior thyroid nerve. Therefore, a syringe and 16G needle were used to aspirate the most prominent part of the right lobe (Fig. 4). Approximately 60 ml of thick brown pus were returned on aspiration (Fig. 5). A standard right hemithyroidectomy was performed after the gland was decompressed (Fig. 6). Although the procedure was technically difficult due to the presence of acute inflammatory change around the thyroid lobe, careful and deliberate dissection coupled with aspiration allowed the operation to progress in a satisfactory manner.

Staphylococcus aureus was isolated from the aspirate. Histologic examination revealed the presence of an abscess cavity lined by granulation tissue and surrounded by atrophic benign thyroid follicles. No evidence of malignancy was present. The patient recovered uneventfully without voice alterations, hypocalcemia or recurrence. Antibiotics were continued until discharge at the fourth post-operative day.

3. Discussion

Thyroiditis refers to a wide spectrum of inflammatory disorders. Acute suppurative (microbial) thyroiditis is an uncommon form that is due to microbial infection.^{3–5} When the infection advances in

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Fig. 1. Anterior view of the neck in a patient with a thyroid abscess at the right lower pole. A marker has been used to outline the warm tender mass on the skin surface.



Fig. 2. Anterolateral view of the neck in a patient with a thyroid abscess. Black arrows point to the area on the skin that is erythematous and hot.

patients with acute suppurative thyroiditis, an abscess may develop within the gland substance.

Thyroid abscesses are uncommon in modern medical practice. They usually occur in patients who are immuno-compromised, those with pre-existent thyroid pathologies or anatomic gland anomalies.^{3,4,9,10} This case was unusual because we were not able to identify an underlying thyroid pathology or anatomic anomaly.

The diagnosis is usually delayed because the presenting features are subtle. They mimic the symptoms of acute pharyngitis, with anterior neck pain, pyrexia and odynophagia.^{1–5} Cutaneous

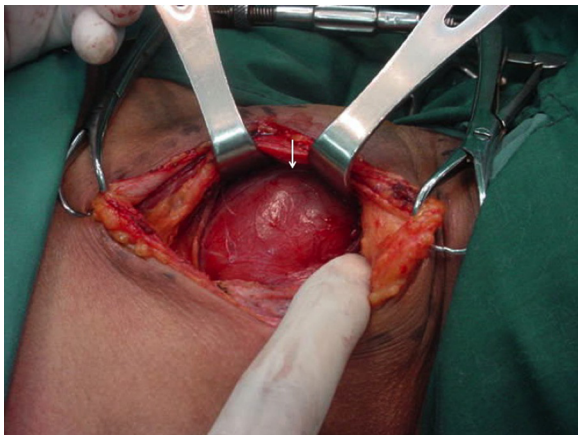


Fig. 3. The anterior neck has been opened through a collar incision. The white arrows indicate the most prominent area on the lobe where the abscess is pointing toward the superficial tissues.



Fig. 4. The anterior neck has been opened through a collar incision. A 20 ml syringe and 16G needle are used to decompress the abscess prior to thyroidectomy.

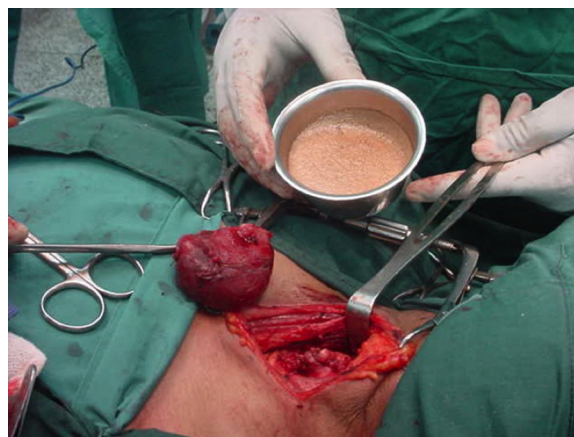


Fig. 5. Completed hemithyroidectomy. The right lobe and isthmus have been removed and approximately 60 ml of thick pus are collected in the gallely pot.

erythema may also be present with advanced infections⁴ as seen in this case.

There are usually non-specific markers of infection on blood investigations, including leukocytosis and elevated ESR, but imaging with ultrasound or CT scans are quite sensitive to detect abscess collections.^{11–13}

Thyroid abscesses respond well to the traditional management that includes systemic antibiotics and operative drainage.¹⁴ The commoner pathogens isolated in thyroid abscesses are *S. aureus* and

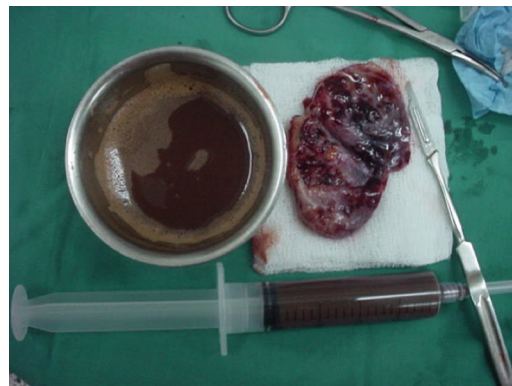


Fig. 6. The excised right lobe is shown. The right lobe has been largely replaced by the thyroid abscess cavity.

Streptococci pneumoniae.¹¹ This should be taken into account when commencing empiric antibiotics. Less common pathogens include *Klebsiella Spp.*,¹⁵ *Salmonella Spp.*,^{16,17} *Acinetobacter*¹⁸ and *Eikenella corrodens*.^{19,20} Mycotic abscesses have also been reported.²¹ Empiric antibiotics, therefore, should be chosen with this in mind to cover gram positive pathogens until there can be culture directed treatment.

There have been reports of percutaneous image-guided drainage of thyroid abscesses with catheter irrigation^{12,13} and intra-cavitary antibiotics.¹⁴ However, in the presence of underlying pathology, operative management is more appropriate to achieve definitive control and prevent recurrence.^{1,3,4,6,9,10} In this case, aspiration was used only as a temporizing measure to facilitate thyroidectomy. Thyroidectomy may be technically difficult in these circumstances due to the marked peri-glandular inflammatory change but careful and deliberate dissection should allow the operation to proceed in a satisfactory manner.

4. 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.

5. 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.

Conflict of interest

There are no conflicts of interest to be reported by any of the authors.

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Ethical approval

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

Authors contribution

SOC conceptualized and wrote the paper. VN edited the paper and checked for intellectual content. DH edited the paper and checked for intellectual content.

Key learning points

- Although thyroid abscesses are uncommon, clinicians must be aware of the diagnosis to prevent a delay in diagnosis

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