CASE REPORT

Acute Suppurative Thyroiditis with Progression to Thyroid and Retropharyngeal Abscesses: A Case Report

Zainal Abidin Az[a], Mohammad Nasir Z[b], Hoong FV[b]

[a]Department of Otorhinolaryngology - Head & Neck Surgery, Hospital Sultan Abdul Aziz Shah, Universiti Putra Malaysia, Selangor, Malaysia
[b]Department of Otorhinolaryngology - Head & Neck Surgery, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Selangor, Malaysia

Keywords
abscess, acute, suppurative, thyroid, thyroiditis

Corresponding Author
Dr Zuraini Mohammad Nasir
Department of Otorhinolaryngology - Head & Neck Surgery, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Selangor, Malaysia
E-mail: zurainainasir@upm.edu.my

Received: 4th November 2024; Accepted: 8th April 2025

Doi: https://doi.org/10.31436/imjm.v25i02/2758

ABSTRACT

Acute Suppurative Thyroiditis (AST) is an exceedingly rare cause of thyroid gland infection. Due to its rarity and non-specific presenting symptoms, diagnosis and treatment of AST may be delayed. We report a case of an elderly male who presented with five days history of intermittent fever, sore throat, dysphagia and vomiting. Painless thyroid swelling was only noted during admission. Ultrasound scan (USS) of the neck showed a well-defined lesion occupying the left thyroid lobe and computed tomography (CT) of the neck showed a rim enhancing collection occupying the left thyroid lobe, extending to retropharyngeal and retrotracheal spaces. Pigtail drainage was performed with no clinical improvement, necessitating incision and drainage, where necrotic tissue mixed with pus was drained. Intraoperative tissue culture isolated *Enterococcus faecium*, and antibiotic therapy was changed following tissue culture sensitivities (IV Augmentin, 1.2 gram, TDS). This case highlights the importance of early diagnosis of AST particularly in elderly patients with multiple comorbidities, where symptoms may be atypical. Ultrasound and CT scans are important diagnostic modalities in AST and microbiological assessment is crucial in selecting appropriate antibiotics. The choice of type of drainage should be individualized based on disease extension and comorbidities. A multidisciplinary approach is crucial to ensure best treatment outcome.

INTRODUCTION

Acute suppurative thyroiditis (AST) is an exceedingly rare condition of the thyroid gland where there is progression of thyroid gland infection into abscess formation.[1] It is a potentially life-threatening condition due to the complications that may ensue, with a reported mortality rate of about 7%.[2] Herein, we report a case of AST with thyroid and retropharyngeal abscesses followed by discussion on clinical presentation, diagnostic modalities and treatment.

CASE REPORT

A 65 year old gentleman with underlying hypertension, diabetes and chronic kidney disease, presented with five days history of intermittent fever, neck swelling, sore throat, dysphagia and vomiting. He denied shortness of breath, chest pain, abdominal pain, diarrhea, neck pain and foreign body ingestion. Clinically, he appeared unwell and lethargic. His vital signs were stable with good oxygenation. He was noted to have left anterior neck swelling measuring 6x4 cm, firm, non-tender, not warm and fixed (figure 1). The swelling moved upon swallowing, the trachea was deviated to the right and there was no associated cervical lymphadenopathy. Intraoral examination was normal with no trismus. Flexible scope showed slight bulging of posterior pharyngeal wall, oedematous arytenoids and pooling of saliva. Other laryngeal structures were normal including vocal cord mobility.

Blood investigations showed raised white cell count (35.7 10^3/uL), low hemoglobin (7.2g/dL), raised creatinine (435 umol/L) and urea (36.5 mmol/L). C-reactive protein was

raised (265 mg/L) and random blood glucose was elevated (13 mmol/L). Venous blood gas showed uncompensated metabolic acidosis. Thyroid function test was normal.

Ultrasound scan (USS) of the neck was performed and showed a well-defined lesion occupying the left thyroid lobe measuring approximately 2.2cm x 3.6cm x 3.7cm (AP x W x CC) (figure 2). Contrast enhanced computed tomography (CECT) of the neck was done and showed a rim enhancing collection occupying the left thyroid lobe measuring approximately 3.0cm x 3.6cm x 5.8cm (AP x W x CC), extending to retropharyngeal and retrotracheal spaces, which may represent acute purulent thyroiditis complicated with retropharyngeal and retrotracheal abscesses (figure 3). Empiric broad-spectrum antibiotics (IV Ceftriaxone, 1 gram, BD) was started. Ideally, in the presence of abscess, open drainage would be the first-line therapy. However, due to the patient's high surgical risk, pigtail insertion into his left thyroid gland was done on day three of admission, where 5 mLs of pus was drained.

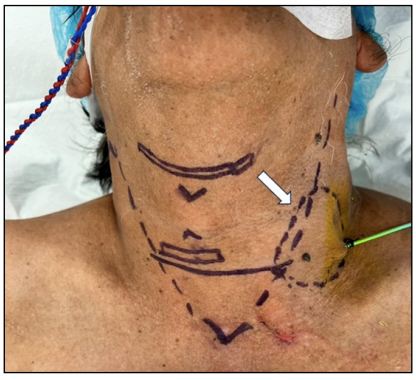

Figure 1: Clinical image of left thyroid swelling (arrow) with deviation of trachea to the right prior to surgery

In view of no clinical improvement and no further drain output from pigtail, incision and drainage of left thyroid collection was performed on day nine of admission. Intra-operatively, necrotic tissue mixed with 10 mLs of pus was drained from left thyroid lobe. The abscess cavity extended into retrotracheal and retropharyngeal spaces. Intraoperative tissue culture isolated *Enterococcus faecium*, sensitive to Amoxicillin/ Clavulanate, Imipenem and Metronidazole. Histopathological examination (HPE) of thyroid tissue and abscess wall was reported as consistent with acute suppurative thyroiditis. Antibiotic therapy was changed following tissue culture sensitivities (IV Augmentin, 1.2 gram, TDS). His condition and infective parameters improved markedly and he was discharged well four days after surgery. He refused further investigations upon follow up at clinic.

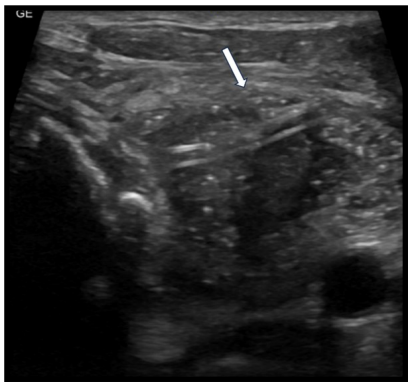

Figure 2: USS neck showed a well-defined lesion occupying the left thyroid lobe (arrow).

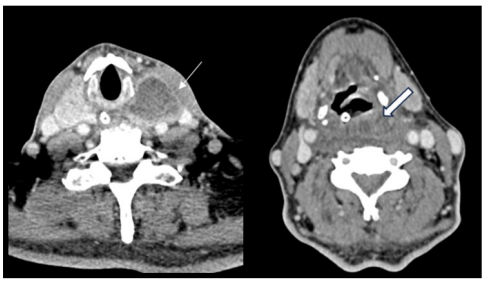

Figure 3: CECT neck showed a rim enhancing collection occupying the left thyroid lobe (thin arrow) extending to retropharyngeal and retrotracheal spaces (thick arrow).

DISCUSSION

Acute suppurative thyroiditis (AST) is a very rare cause of thyroid gland infection, which comprises of less than 1% of all thyroid gland diseases.[1] Thyroid gland is relatively protected from infection due to its encapsulation, high iodine content, rich blood supply and good lymphatic drainage.[1] The likely aetiologies of AST are pre-existing anatomical abnormality such as pyriform sinus fistula, immunosuppression state and hematogenous or lymphatic spread.[2] Iatrogenic cause has also been implicated as AST was reported to occur after fine needle aspiration (FNA) (1). Additionally, Lafontaine et al. reported that 28% of cases are idiopathic.[2] Predisposing factors include Hashimoto's disease, large goiters and thyroid cancer.[1] In our case, the likely cause of AST is immunosuppression state due to chronic kidney disease coupled with uncontrolled Diabetic Mellitus.

AST can affect both children and adults. In children, the underlying cause is often due to third or fourth branchial

arch anomalies or a piriform sinus fistula.[1] Among adults who are affected, majority of them are around 40 years old with female predominance.[2] Left thyroid gland has been reported to be mostly affected.[2] The most common causative pathogen has been found to be gram-positive bacteria.[3] Rarely AST is caused by fungal, tuberculosis or parasitic infections.[2]

Presenting symptoms of AST include fever, neck pain and sore throat.[1] Odynophagia and dysphagia may follow. However, these symptoms are non-specific and patients are often misdiagnosed as common cold or pharyngitis at initial presentation, leading to delayed diagnosis and treatment.[2] Differential diagnoses of AST include subacute or chronic thyroiditis, thyroid cyst rupture, thyroid gland haemorrhage, thyroid nodule infarction and rapidly growing thyroid cancers.[1] It may be difficult to distinguish AST from subacute or chronic thyroiditis as the presenting symptoms are similar.[1] FNA should be done to confirm the diagnosis of abscess, identify causative pathogen and its sensitivities and rule out subacute thyroiditis or malignancy.[4]

Laboratory findings may show elevated White Cell Count, C-reactive protein, erythrocyte sedimentation rate (ESR) and rarely, transient thyrotoxicosis.[5] Thyrotoxicosis may occur due to the release of pre-formed thyroid hormone from the infected gland.[5] Increased thyroglobulin level is helpful in identifying the thyroid gland as the source of inflammation or infection.[1] However, none of these investigations are diagnostic.

Imaging studies are important to establish the diagnosis and to differentiate AST and subacute thyroiditis. Ultrasound scan (USS) of the neck is the best imaging modality for detecting early changes of AST. The changes observed may include perithyroidal hypoechoic space, hypoechoic area in the thyroid gland and effacement of tissue around the thyroid gland.[2] When abscess has formed due to AST, CECT neck is recommended, where it can assess the size and extension of the abscess with better anatomical delineation and identify the presence of anatomical abnormalities such as pyriform sinus fistula.[2]

Prompt treatment is vital as the infection may cause destruction of the thyroid and the parathyroid glands, vocal cord palsy, airway obstruction, spread to mediastinum and other deep neck spaces and fistula to the trachea or oesophagus.[5] Empirical antibiotic therapy should be started immediately, and antibiotics of choice should target Gram-positive and anaerobic bacteria. If there is no clinical improvement, drainage is advocated.[5] However, in unstable patients with airway compromise, urgent drainage must be done. Several options are available to drain abscess: needle aspiration, incision and drainage and thyroidectomy.[2] There is significant variation regarding the choice of drainage to be used. If the abscess is small, needle aspiration or percutaneous catheter drainage may suffice.[2] However, some studies suggest early surgical drainage is advocated to prevent disease progression.[1] In cases with large abscess formation or deep neck space involvement, open surgical drainage is required. Thyroidectomy may be necessary in patients with recurrent AST or underlying thyroid pathology such as Hashimoto's thyroiditis. As identification of anatomic structures in infective state is often difficult, open surgical approach should be performed with caution.[1]

Outcomes of AST may vary according to the intervention, the extent of infection, and the patient's comorbidities. A systematic review by Lafontaine et al. has found that patients who had early surgical drainage recovered earlier with lower recurrence rates compared to patients who received antibiotics alone or percutaneous drainage.[2] However, conservative management with percutaneous drainage and prolonged intravenous antibiotics has been reported as a successful alternative in patients with high surgical risk.[1] After resolution of thyroid abscess, it is important to investigate the patients for anatomical abnormality such as fistula by performing barium swallow, CECT neck or microlaryngoscopy.[2]

CONCLUSION

Early diagnosis of acute suppurative thyroiditis (AST) is crucial to prevent life-threatening complications. This case highlights the diagnostic challenges of AST and the

importance of individualized treatment based on the comorbidities of the patients. Atypical presentations of AST may delay diagnosis and treatment; hence, the condition must be considered in patients presenting with anterior neck swelling with signs of infection. FNA, USS or CECT are important diagnostic modalities. Additionally, multidisciplinary care involving endocrinologists, radiologists and infectious disease specialists, is essential to improve management of patients and outcome. Early antimicrobial therapy and surgical drainage are the mainstay treatment for AST. Increased awareness of AST and its potential complications can lead to earlier intervention and improved patient outcomes.

CONFLICT OF INTEREST

No conflict of interest.

REFERENCES

1. Falhammar H, Wallin G, Calissendorff J. Acute suppurative thyroiditis with thyroid abscess in adults: clinical presentation, treatment and outcomes. BMC Endocr Disord. 2019;19:130. doi:10.1186/s12902-019-0458-0
2. Lafontaine N, Learoyd D, Farrel S, Wong R. Suppurative thyroiditis: Systematic review and clinical guidance. Clin Endocrinol (Oxf). 2021;95 (2):253-264. doi: 10.1111/cen.14440.
3. Paes JE, Burman KD, Cohen J, et al. Acute bacterial suppurative thyroiditis: a clinical review and expert opinion. Thyroid. 2010;20(3):247-55. doi: 10.1089/ thy.2008.0146.
4. Tan HY, Sanudin SH, Lum SG, Wong EHC. An unusual first presentation of hypopharyngeal carcinoma as thyroid abscess: Case report of a diagnostic challenge. Int J Surg Case Rep. 2021;81:105723. doi: 10.1016/j.ijscr.2021.
5. Tien KJ, Chen TC, Hsieh MC, et al. Acute suppurative thyroiditis with deep neck infection: a case report. Thyroid. 2007;17(5):467-9. doi: 10.1089/thy.2006.0242.