

## A Rare Case Report Of Thyroid Abscess Presenting As Acute Suppurative Thyroiditis

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Type of Publication: Case Report

Conflicts of Interest: Nil

### Abstract

Acute suppurative thyroiditis (AST) is a rare and potentially life threatening condition caused by bacterial infection, which causes pus to accumulate and result in abscess formation. In this case report, a 37 years old male patient was admitted due to complaints of fever, cough and painful neck swelling. The patient had medical history of Type 2 diabetes mellitus, pyogenic meningitis, septicemia and liver abscess with multiple pulmonary nodules. The ultrasound and CT scan revealed AST progressing to thyroid abscess. Laboratory parameters showed elevated CRP, ESR, PCT and WBC levels indicating infection. The patient was admitted in MDICU and underwent Thyroid exploration. The shifted to room and was treated with IV antibiotics as pus culture yielded *Klebsiella pneumoniae*.

**Keywords:** Thyroid abscess, Neck swelling, Thyroiditis, Infection

### Introduction

Acute suppurative thyroiditis (AST) is a rare and potentially life threatening condition caused by bacterial infection, which causes pus to accumulate and result in abscess formation and may also spread to adjacent tissues.<sup>[1]</sup> AST accounts for 0.1-0.7% of all thyroid diseases.<sup>[2]</sup> Due to the rich vascular supply, high iodine content and good lymphatic drainage the infection of the thyroid gland is rare and progression to abscess formation is even rarer because of the structural and physiological properties of the thyroid gland.<sup>[3]</sup> Previous reports indicate that thyroid abscesses are usually caused by anatomical abnormalities through pyriform sinus fistula<sup>[4]</sup> or due to ingestion of a foreign body.<sup>[5]</sup> The causative organisms are mostly Gram positive organisms such as *Staphylococcus* and *Streptococcus* species.<sup>[6]</sup>

### Case Report

A 37 years old male patient presented with complaints of fever, cough with expectoration and painful right sided neck swelling since 2 days. He had medical history of Type 2 diabetes, pyogenic meningitis, septicemia and liver abscess with multiple pulmonary nodules. On examination, identified diffuse neck swelling from upper border of thyroid cartilage till suprasternal notch.

Laboratory investigations revealed elevated WBC(22,200 cells/cumm), CRP(318.6mg/L), ESR(110mm/hr), PCT(5.87ng/mL), HbA1c(9.6%) levels. TFT was found to be normal. Urine routine showed uric acid crystals. RFT and LFT was found to be normal.

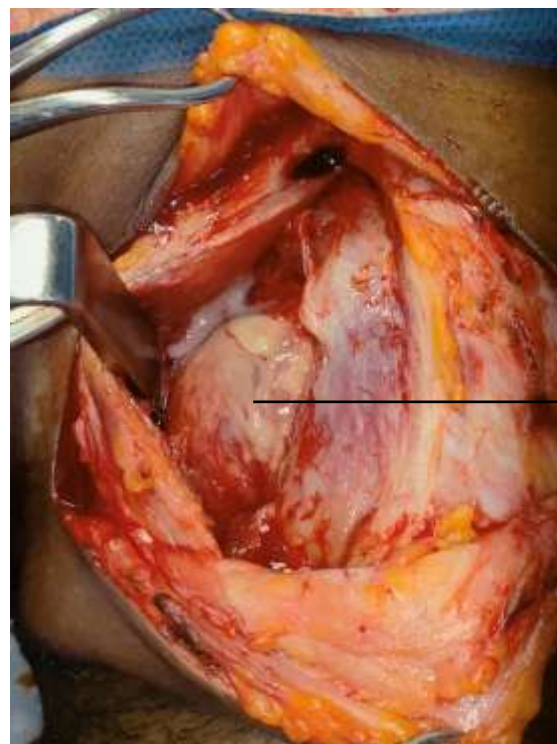
Ultrasound of neck findings were heterogeneous nodule of 28x18 mm in the left lobe with internal calcification and increased peripheral vascularity. Adjacent sterno cleido mastoid muscles appeared inflamed. These findings were suggestive of acute suppurative thyroiditis progressing to thyroid abscess. CT Chest showed cavitating nodules and multiple small nodules in bilateral lung fields. Subcutaneous fat stranding in anterior neck extending to upper chest wall. CT Neck showed thyroiditis with nodule in left lobe of thyroid extending to isthmus-evolving abscess with thyroid nodule. Cellulitis in anterior neck and a hypodense area noted in posterior

aspect extending to left lateral wall of upper esophagus.

Sputum culture yielded normal flora and MTB not detected. Blood culture was sterile after 6 days of incubation. Sputum gram staining yielded Gram positive cocci in short chains and pairs.

Incision and drainage of thyroid abscess was done under general anesthesia and findings indicate abscess involving left lobe of isthmus of the thyroid gland. Pus was drained and sent for culture. Pus culture revealed *Klebsiella Pneumoniae* and started sensitive antibiotics that was continued for 2 weeks.

**Figure 1: Abscess evolving left lobe of the thyroid gland.**



Thyroid abscess region where incision was made and drained.

## Discussion

Thyroiditis usually caused by an infectious agent may be acute or chronic. AST is a rare-life threatening emergency of the thyroid gland.<sup>[7]</sup> Approximately 92% of the people affected are below the age of 40 years similar to our case report, but there is also a slight female predominance.<sup>[8]</sup> Majority of individuals with AST belong to one of four

categories: (1) Thyroiditis caused by bacterial infection; (2) infection of the thyroid nodule or cancer; (3) infection caused by esophageal rupturing due to foreign body ingestion or esophageal malignancy; and (4) infection of the normal thyroid gland.<sup>[9]</sup> Upto 95% of AST develops in the left lobe of thyroid gland which was similar to our case report.<sup>[10]</sup>

About 35-40% of cases were caused by *Staphylococcus* and *Streptococcus* species while infection with *Pneumococca*, *Salmonella*, *Mycobacteria*, and *Fungus* are also reported.<sup>[11]</sup> In this case the causative organism was *Klebsiella pneumoniae*. Underlying illness such as tuberculosis, diabetes mellitus and human immunodeficiency virus infection tend to enhance the development of thyroid abscess.<sup>[12]</sup> Similar for the presenting case, also showed a medical history of diabetes.

The clinical manifestation of AST is found to be broad, as asymptomatic cases have been documented.<sup>[13]</sup> Most common clinical findings are fever and painful anterior neck mass.<sup>[14]</sup> Other manifestations include dysphagia, hoarseness of voice and sore throat. The pain may radiate to chest, mandible or ears.<sup>[15]</sup> In this case the patient had fever, pain and swelling in neck along with warmth.

Early diagnosis of AST is critical to avoid catastrophic effect. The laboratory findings indicated increased ESR and leukocyte count.<sup>[16]</sup> In terms of thyroid function test, majority of individuals appear euthyroid and no thyroid autoantibodies were detected.<sup>[17]</sup> Ultrasound scan of thyroid reveal some accumulation of fluid surrounding the affected thyroid lobe and heterogenous mass or any calcifications all of which are typical findings in individuals with AST in early stages of disease. CT scans provide information on extra-thyroidal involvement.<sup>[18]</sup> For identifying pyriform sinus fistulae, barium swallow studies are considered sensitive.<sup>[15]</sup> Misdiagnosis of subacute thyroiditis is extremely dangerous as prescribing prednisolone might cause AST to rapidly deteriorate and become life threatening.<sup>[19]</sup> FNAC is the best procedure for pathological differentiation between AST and subacute thyroiditis.<sup>[20]</sup>

The ideal treatment strategy for acute suppurative thyroiditis is still being discussed. Supportive treatment and antibiotic therapy is used to treat AST in the beginning. For severe infections, parenteral antibiotics are required, and the choice of antibiotic is guided by microscopic examination, staining, and culture.<sup>[21]</sup> Incision and drainage has been reported to be effective in many reports, and it can be repeated if the abscess remains or if there is a progression.<sup>[1]</sup> In the presenting case incision and drainage was done and treated with IV antibiotics on the basis of culture

reports. In unstable individuals with compromised airways, drainage is critical. In extreme situations, in patients who do not respond to appropriate antibiotic therapy and drainage, open surgery with complete, near total, or hemi-thyroidectomy can be considered as treatment options.<sup>[22]</sup>

## Conclusion

Acute suppurative thyroiditis is a rare disease which may progress to thyroid abscess and potentially life threatening if left untreated. Despite the diagnostic tests and advanced antibiotic treatment, AST continue to cause considerable morbidity and mortality especially when the treatment is delayed. The illness may recur in some patients irrespective of the management hence thyroid function tests should be performed on a regular basis. Any patient with known thyroid abnormalities presenting with neck discomfort should be considered for radiological evaluation of this disease. Early diagnosis and appropriate treatment reduce morbidity and mortality. The mainstay of treatment is antibiotic therapy, drainage and in selected cases surgery.

## Reference

1. Paes JE, Burman KD, Cohen J, Franklyn J, McHenry CR, Shoham S, et al. Acute bacterial suppurative thyroiditis: a clinical review and expert opinion. *Thyroid* 2010 Mar 1;20(3):247-55.
2. Elorza JL, Echenique-Elizonda M. Acute suppurative thyroiditis. *J Am Coll Surg* 2002;195(5):729-30.
3. Har-el G, Sasaki CT, Prager D, Krespi YP. Acute suppurative thyroiditis and the branchial apparatus. *Am J Otolaryngol.* 1991;12(1):6-11.
4. Yolmo D, Madana J, Kalaiarasi R, Gopalakrishnan S, Kiruba Shankar M, Krishnapriya S. Retrospective case review of pyriform sinus fistulae of third branchial arch origin commonly presenting as acute suppurative thyroiditis in children. *J Laryngol Otol.* 2012;126(7):737-42.
5. Chen CY, Peng JP. Esophageal fish bone migration induced thyroid abscess: case report and review of the literature. *Am J Otolaryngol.* 2011;32(3):253-5.

6. Yedla N, Pirela D, Manzano A, Tuda C, Lo Presti S. Thyroid abscess: challenges in diagnosis and management. *J Investig Med High Impact Case Rep*. 2018;6:23.
7. Starakis I, Stoubou V, Siagris D, Alexandridis T, Petrochilos I, Karatza C. Brucellar thyroid abscess: case report and review of the causes and management of this rare medical entity. *Infect Dis Clin Pract* 2007;15(1):70-3.
8. Touihmi S, Mehdaoui A, Oulmaati A. Acute suppurative thyroiditis with abscess. *J Pediatr Surg Case Rep* 2021;65:101757.
9. Miyauchi A. A new management algorithm for acute suppurative thyroiditis. *Nat Rev Endocrinol* 2010 Aug;6(8):424-6.
10. Cannizzaro MA, Veroux M, La Ferrera MG, Marziani A, Cavallaro N, Corona D, et al. *Klebsiella pneumoniae* pulmonary infection with thyroid abscess: report of a case. *Surg Today* 2008;38(11):1036-9.
11. Starakis I, Stoubou V, Siagris D, Alexandridis T, Petrochilos I, Karatza C. Brucellar thyroid abscess: case report and review of the causes and management of this rare medical entity. *Infect Dis Clin Pract* 2007;15(1):70-3.
12. Igarashi H, Yoshino H, Hijikata M, Kumashiro N, Ando Y, Uchino H, et al. Acute suppurative thyroiditis in infected thyroid cyst in an adult patient under hemodialysis. *Clin Case Rep* 2017;5(5):570-3.
13. Barton GM, Shoup WB, Bennett WG, Williams JB, Vesely DL. Case report: combined *Escherichia coli* and *Staphylococcus aureus* thyroid abscess in an asymptomatic man. *Am J Med Sci* 1988;295(2):133-6.
14. Wu C, Zhang Y, Gong Y, Hou Y, Li S, Zou Y, et al. Two cases of bacterial suppurative thyroiditis caused by *Streptococcus anginosus*. *Endocr Pathol* 2013; 24(1):49-53.
15. Sayyahfar S, Nasiri SJ. First report of a thyroid abscess in the pediatric age group caused by *Arcanobacterium haemolyticum*. *J Infect Chemother* 2012;18(4):584-6.
16. Cabizuca CA, Bulzico DA, de Almeida MH, Conceição FL, Vaisman M. Acute thyroiditis due to septic emboli derived from infective endocarditis. *Postgrad Med* 2008;84(994):445-6.
17. Tien KJ, Chen TC, Hsieh MC, Hsu SC, Hsiao JY, Shin SJ, et al. Acute suppurative thyroiditis with deep neck infection: a case report. *Thyroid* 2007;17(5): 467-9.
18. Pearce EN, Farwell AP, Braverman LE. Thyroiditis. *New England J Med* 2003;348(26):2646-55.
19. Falhammar H, Wallin G, Calissendorff J. Acute suppurative thyroiditis with thyroid abscess in adults: clinical presentation, treatment and outcomes. *BMC Endocr Disord* 2019;19(1):1-7
20. San Martin VT, Kausel AM, Albu JB. *Haemophilus influenzae* as A rare cause of acute suppurative thyroiditis with thyrotoxicosis and thyroid abscess formation in a patient with pre-existent multinodular goiter. *AACE Clinical Case Reports* 2017;3(3):e251-4.
21. Ghaemi N, Sayedi J, Bagheri S. Acute suppurative thyroiditis with thyroid abscess: a case report and review of the literature. *Iranian J Otorhinolaryngol* 2014;26(74):51.