



THYROID ABSCESS: A CASE SERIES

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KEYWORDS : Thyroid abscess**INTRODUCTION**

Thyroid abscess is a rare surgical pathology, accounting for less than 0.7% of surgical pathologies involving the thyroid gland.^{1,2} This is due to its rich blood supply and lymphatic drainage, high concentration of iodine that inhibits bacterial growth, protective fibrous capsule, and fascial planes separating it from other neck structures.²⁻⁴ It may lead to complications like septicaemia, paralysis of the vocal cords, retropharyngeal abscess and suppurative media stinitis and may occasionally lead to osteomyelitis or septic thrombophlebitis.² It may also lead to tracheal and oesophageal perforation.⁵ The left lobe is commonly affected.⁶ If left untreated, thyroid abscess can be life threatening resulting in a mortality of 12% or more.⁶

In this article, 3 such cases which were encountered at a rural tertiary care facility has been discussed.

CASE No. 1

A 23-year-old man presented with a 10 day history of a progressively enlarging left neck swelling. The neck swelling was associated with fever, pain and dysphagia. There was no history of other significant medical conditions, thyroid disease or neck trauma. On examination, he was febrile at 100.2 °F and tachycardic with a pulse rate of 107 beats per minute. Other hemodynamic parameters were otherwise normal. Examination revealed a tender, warm, fluctuant swelling in the left anterior neck. There were no signs of trauma to the neck. Examination of the oral cavity was normal. Systemic review was otherwise unremarkable. (Image 1)

**Image 1**

Blood investigation revealed leucocytosis at $14.6 \times 10^9/L$ with neutrophil predominance. Other blood investigations were unremarkable. An urgent ultrasound scan of the neck revealed a large irregular collection at the anterior aspect left side of the neck measuring 3.8 cm (AP) \times 2.6 cm (W) with the contents showing heterogeneous echogenicity. The left thyroid lobe and isthmus could not be visualized. There was no evidence of retrosternal extension. Cervical lymphadenopathy was also noted bilaterally.

A fine-needle aspiration of the swelling was performed on the same day and pus was obtained. Pus cultures didn't reveal any organism. The diagnosis of left thyroid abscess was made and the patient was started on intravenous Ceftriaxone and metronidazole according to institutional protocol.

As the patient's condition did not improve even after 48 hours of intravenous antibiotic therapy and the swelling and fever persisted along with erythema of the overlying skin, neck exploration was subsequently performed on day 3 of hospital admission. Intra-operatively, a left-sided thyroid abscess was confirmed. The left strap muscles were eroded and the left thyroid lobe was necrotic with loss of normal anatomical features. The abscess was drained and wound debridement performed. Pus samples sent for culture didn't reveal any growth. A corrugated drain was inserted and daily irrigation with saline and povidone-iodine was instituted. The patient was maintained on intravenous Piperacillin-Tazobactam 4.5 gms thrice a day for 7 days and metronidazole 500 mg thrice a day for 10 days. Histopathological analysis of tissue excised during surgery revealed features consistent with an abscess.

Post-operatively, the patient recovered well with normalization of the leucocyte count. A post-operative computed tomography (CT) scan of the neck on day 5 of admission showed abscess resolution. The wound was subsequently allowed to close via secondary intention. He was discharged well after 14 days of hospital stay. During his out-patient follow-up, the patient remained in good health and his wound had healed.

CASE No. 2

A 40-year-old female presented with a history of swelling over the left side of anterior aspect of neck associated with pain and low grade fever for last 2 weeks with sudden increase in pain and size of the swelling over last 1 week. There was no evidence of hand tremors or hoarseness of voice, which would suggest thyroid dysfunction. The physical examination revealed a tender swelling measuring 3.5 x 3 cm in size over the left side of the neck, which moved on deglutition.

The ultrasound of neck revealed a heterogeneous mass just below the subcutaneous tissue involving the left lobe of thyroid measuring 2.3 x 2.5 cm in size and the diagnosis of abscess was made. CT scan of the neck revealed multiple ring enhancing cystic swellings, the largest measuring 3.0 x 2.0 x 1.5 cm in size with cystic areas involving the left lobe of the thyroid. The adjacent neck vessels and the right lobe of the

thyroid gland were normal. (Image 2)



Image 2

Blood investigations revealed that thyroid function test was within normal limits and erythrocyte sedimentation rate (ESR) was raised at >100 mm (normal range <30 mm) and an increased leucocyte count of $13.9 \times 10^9/L$ with neutrophilic predominance. A fine needle aspiration of the mass showed a focus of necrosis and a small pocket of abscess lined by granulation tissue. There was no evidence of malignant cells and thyroiditis. Culture of the pus from the abscess obtained during the fine needle aspiration didn't reveal any organism.

The patient was then started on intravenous ceftriaxone 1 gm 12 hourly for 5 days and intravenous metronidazole 500 mg 8 hourly for 7 days. She responded to antibiotic treatment and did not require any surgical drainage as her symptoms settled. She was later switched to oral amoxicillin clavulanate (500 + 125) mg 8 hourly for 7 days.

CASE No. 3

A 38-year-old female presented with an enlarging painful neck swelling of 3 weeks duration. There was a history of low grade degree fever and odynophagia since the onset of the swelling. Pain was described as constant and radiating to the occipital region. On examination, the patient was febrile, tachycardia, and restriction of neck movements but no evidence of respiratory distress. Examination of the neck revealed a diffuse swelling occupying in the region of thyroid more prominent on the right than on the left with erythema on the overlying skin. The swelling was warm, tender and fluctuant and movement with deglutition was present. However there was no movement with protrusion of the tongue. No cervical lymphadenopathy was found.

Laboratory investigations revealed leukocytes count of $18.3 \times 10^9/L$ with 84% of polymorphs, hemoglobin of 9.8 gm%, erythrocyte sedimentation rate (ESR) of 48 mm/h, fasting blood sugar of 436 mg/dl, HbA1c of 9.6% and blood culture was sterile. Thyroid function test was normal. Ultra sonography (USG) of the neck demonstrated a well-defined cystic area with echoes seen in the right thyroid lobe measuring 15.2 mm \times 13.1 mm \times 12.8 mm, suggestive of thyroid abscess. Few clear cysts were also seen in the right lobe. The left lobe is normal in size and echotexture. There was no evidence of lymphadenopathy. Needle aspiration of the swelling obtained thick yellow pus, and microscopic examination showed dense collection of neutrophil and lymphocyte in hemorrhagic background with culture yielding *Staphylococcal aureus* which was sensitive to imipenem, ceftriaxone, ciprofloxacin, gentamycin, vancomycin. The patient was provided with intravenous ceftriaxone 1gm 12 hourly for 7 days and metronidazole 500 mg 8 hourly for 10 days according to institutional protocol since admission at the hospital. Insulin was advised for controlling diabetes in this acute setting. The patient responded well to the antibiotic regime and was discharged after 10 days of hospital stay with advice of oral ciprofloxacin 500 mg 12 hourly for 5 days along with medications for diabetes control.

DISCUSSION

Primary thyroid abscess is a rare type of head and neck infection.⁷ The patient usually presents with fever and a painful neck swelling, which would give rise to a number of differential diagnoses like thyroiditis, fungal or tuberculous infection of the thyroid gland and thyroid abscess. Other causes to be considered would be an infected branchial cleft cyst or sinus, infected thyroid tumour and lymphadenitis in the region of the thyroid.⁸

It is most commonly caused by gram-positive aerobes, *Staphylococcus aureus* being the most prevalent, but there are also reports of gram-negative organisms and fungi.⁹ Amongst the 3 cases discussed above only in 1 case, the causative organism was found to be *Staphylococcus aureus* while the rest two didn't yield any organism in culture. This can be attributed to the fact that there is rampant use of over the counter antibiotics amongst patients in the region.

Yu et al¹⁰ performed a review of 191 cases from 1980 to April 1997 and compared it with a review of 224 cases (1900-1980). They found that as the numbers of immunocompromised patients has been increasing, cases of suppurative thyroiditis are increasing. In our study, 1 patient was immunocompromised in the form of uncontrolled diabetes mellitus. However, the other 2 patients were immunocompetent. Quintana et al¹¹, El Beayni et al¹², Campos R et al¹³ have encountered thyroid abscesses in immunocompetent patients as well.

Early diagnosis is important as the disease can rapidly progress to fatal complicated state. Ultrasound is the preferred imaging technique for diagnosis of thyroid diseases.¹⁴ It also offers the advantage of needle aspiration. Unless inconclusive, one need not obtain a CT scan or magnetic resonance imaging.¹⁵ If an iodine scan is done, abscess areas may appear as cold.¹⁶ Antimicrobials and surgical drainage of the abscess is the treatment of choice.¹⁷ In this study, 1 case needed surgical drainage along with intravenous antibiotic therapy. However, the other 2 cases responded well to parenteral antibiotic therapy only and didn't need any surgical intervention.

CONCLUSIONS

While dealing with painful neck swellings both in immunocompetent and immunocompromised patients, thyroid abscess must be kept in the differential diagnosis because although a rare entity, it can rapidly progress to complications ultimately leading to death of the patient.

LIMITATIONS

Only 3 cases were encountered. More cases need to be studied for better understanding of the disease and its management.

REFERENCES:

- Sriburee W. Thyroid abscess caused by Salmonella Group C infection. Chiang Mai Med Bull. 2003;42:113-19.
- Cawich SO, Hassranah D, Naraynsingh V. Idiopathic thyroid abscess. Int J Surg Case Rep. 2014;5:484-6.
- Céspedes C, Duran P, Uribe C, et al. Thyroid abscess. A case series and literature review. Endocrinol Nutr. 2013;60:190-6.
- Nirhale D, Athavale V, Goenka G, Bhatia M. Thyroid abscess: A rare entity? Thyroid Res Pract. 2014;11:131-2.
- Brown J, Nguyen HH, Cohen SH. A pain in the neck: thyroid abscess. Am J Med 2014;127:e5-6.
- Ghaemi N, Sayedi J, Bagheri S. Acute suppurative thyroiditis with thyroid abscess: A case report and review of the literature. Iran J Otorhinolaryngol 2014;26:51-5.
- Ogale SB, Tuteja VG, Chakravarty N. Acute suppurative thyroiditis with thyroid abscess. Indian Pediatr 2002;39:1156-8.
- Chainchel Singh, M. K., & Vijayanathan, A. (2019). Idiopathic Thyroid Abscess - A Rare Occurrence. *European endocrinology*, 15(1), 42-43. <https://doi.org/10.17925/EE.2019.15.1.42>
- Paes JE, Burman KD, Cohen J, et al. Acute bacterial suppurative thyroiditis: a clinical review and expert opinion. Thyroid. 2010;20:247-255.
- Yu EH, Ko WC, Chuang YC, Wu TJ. Suppurative *Acinetobacter baumannii* thyroiditis with bacteremic pneumonia: case report and review. Clin Infect Dis. 1998;27:1286-1290.
- Quintana Arroyo S, Lorenzo Villalba N, Saint-Mezard V, Zulfiqar AA, Alonso Ortiz MB, Fuentes Zamorano N. Le cas clinique du mois. Abscès thyroïdien à

- Salmonella enteritidis chez un patient immunocompétent [Thyroid abscess due to Salmonella enteritidis in an immunocompetent patient]. *Rev Med Liege*. 2019;74(11):563-565.
12. El Beayni NK, Araj GF, Beydoun S, Kozah M, Tabbarah Z. *Campylobacter fetus* thyroid gland abscess in a young immunocompetent woman. *IDCases*. 2019;19:e00681. Published 2019 Dec 19. doi:10.1016/j.idcr.2019.e00681.
 13. Campos R, Pérez B, Armengod L, Muñoz E, Ramos A. Absceso tiroideo por *Lactococcus lactis* en paciente inmunocompetente [Lactococcus lactis thyroid abscess in an immunocompetent patient]. *Endocrinol Nutr*. 2015; 62(4): 204-206. doi:10.1016/j.endonu.2014.12.003.
 14. Das DK, Pant CS, Chachra KL, Gupta AK. Fine needle aspiration cytology diagnosis of tuberculous thyroiditis. A report of eight cases. *Acta Cytol*. 1992; 36: 517-522.
 15. Naik KS, Bury RF. Imaging the thyroid. *Clin Radiol*. 1998;53:630-639.
 16. Pearce EN, Farwell AP, Braverman LE. Thyroiditis. *N Engl J Med*. 2003; 348: 2646-2655.
 17. Yedla N, Pirela D, Manzano A, Tuda C, Lo Presti S. Thyroid Abscess: Challenges in Diagnosis and Management. *J Invest Med High Impact Case Rep*. 2018;6:2324709618778709. Published 2018 May 25. doi: 10.1177/2324709618778709