

## A Rare Case of Paediatric Thyroid Abscess: A Case Report

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### Abstract

**Introduction:** Thyroid abscess is acute, highly infectious and a rare condition. Any infection around the region becomes an emergency condition because of its fast manifestation and spread, which needs to be treated in priority. Mortality from suppurative thyroiditis reached 22% before the advent of antibiotics.

**Case Report:** We present the case of 5yr of female child who presented to Department of ENT in October 2022 with the complaints of high fever since 2 days which was sudden in onset along with pain throat and swelling neck since last three days. The swelling was gradually progressive in nature. Airway was not compromised and the patient was maintaining saturation. USG neck and X-Ray neck Lateral view was done. USG revealed a thyroid abscess having about 20 ml of pus in the gland predominantly on the left side. Patient was operated under general anesthesia and after initial aspiration of the abscess incision was given and abscess was drained. The Culture report after 72 hours of incubation was sterile (which may be due to the antibiotics given preoperatively) and the CBNAT report was also negative – suggesting the etiology of abscess to be infective.

**Conclusion:** Thyroid abscess is acute, highly infectious and a rare condition. Most of these patients present with fever and neck pain. All these patients must be thoroughly evaluated and must be kept on antibiotic therapy and when it fails, surgery as incision with drainage can be necessary to avoid complications.

**Keywords:** Thyroid Abscess; Neck Abscess; Paediatric Thyroid Abscess

### Introduction

Thyroid abscess is acute, highly infectious and a rare condition. Thyroid gland is resistant to infection because of its thick fibrous

capsule, generous vascularity, good lymphatic drainage and the presence of large amount of iodine in the gland. Any infection around the region becomes an emergency condition because of its

fast manifestation and spread, which needs to be treated in priority. Thyroid hormone plays no role in the prognosis of the condition. It may be raised or normal irrespective of the situation and does not have any effect in managing as well as diagnosing the situation.

Mortality from suppurative thyroiditis reached 22% before the advent of antibiotics [1]. Currently failure from medical management, the treatment of choice for thyroid abscess is drainage under CT/USG guided.

USG thyroid is the choice of imaging. Open surgical management is associated with high morbidity, therefore reconsideration have been done about the management of thyroid abscess. Needle aspiration or catheter drainage under CT or sonographic guidance is now preferred management.

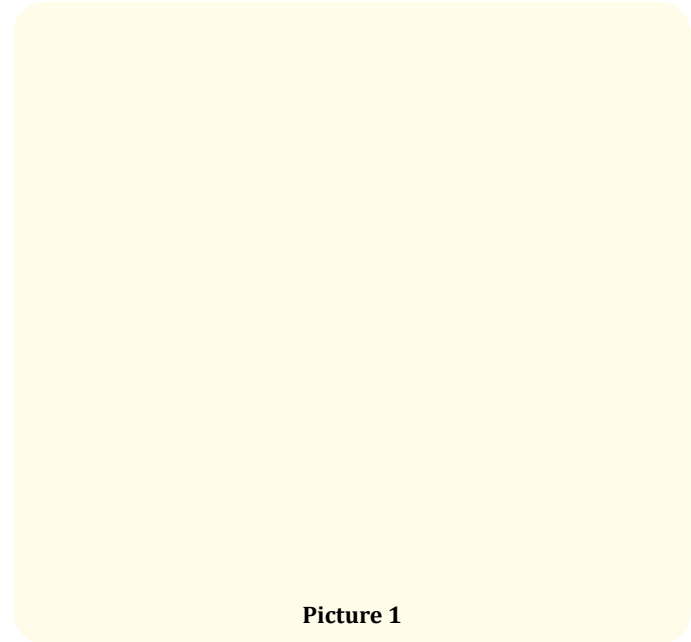
Etiopathogenesis of thyroid abscess is still unclear; onset is usually acute and sudden in onset. There is usually a known history of recent URTI. Neck swelling could or could not be associated with edema, fluctuation of the swelling, tenderness, change in voice or difficulty breathing. The thyroid gland outline may be masked by edema when the isthmus of the thyroid is involved. Characteristic flexion of neck could also be present as seen in our patient. The most common cause of acute suppurative thyroiditis is gram-positive cocci infection, mainly Staphylococcus and Streptococcus [2-4].

Agents encountered less frequently include Salmonella, anaerobes, Mycobacterium tuberculosis [4,5] and mixed flora. Definitive therapy requires surgical incision and drainage along with antibiotics to prevent systemic complication [6].

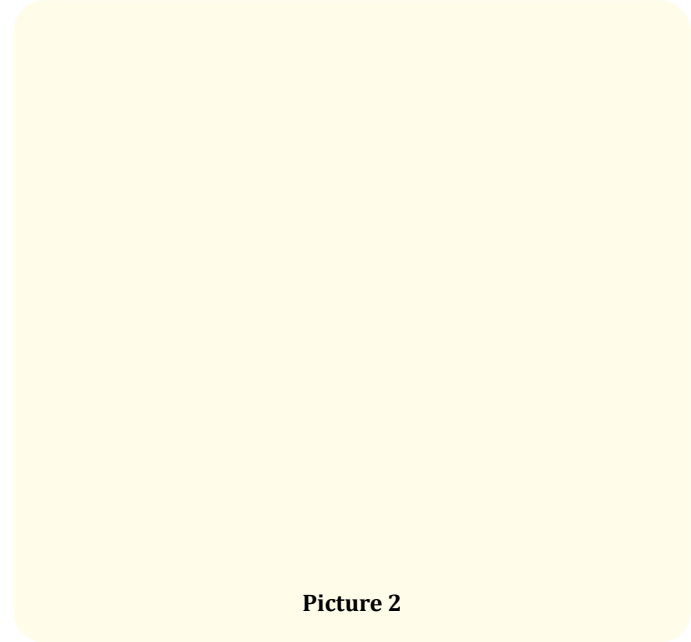
### Case Report

We present the case of 5yr of female child who presented to Department of ENT in October 2022 with the complaints of high fever since 2 days which was sudden in onset along with pain throat and swelling neck since last three days. The swelling was gradually progressive in nature. The swelling was tender and there was some movement with deglutition. Airway was not compromised and the patient was maintaining saturation. At this time there were no problems in deglutition. All the margins were palpable and fluctuations could be elicited USG neck and X-Ray neck Lateral view was done. USG revealed a thyroid abscess having about 20 ml of pus

in the gland predominantly on the left side. X-ray neck was done to rule out neck extension of Retropharyngeal or Parapharyngeal abscess which was not the case as seen in the Picture 1. The thyroid profile of the patient was also normal.



Picture 1



Picture 2

The patient was advised admission for which she denied due to monetary reasons and was given course of antibiotics.

Two days later patient came again; this time complaining of drooling of saliva, inability to take feeds and constant cry of the patient due to pain. On examination, the size of the swelling was greater than 2 days before. On physical examination, she had a firm, painful bulge of the anterior left neck measuring 10 X 7 cm that restricted her neck movement. The overlying skin was warm and erythematous. The patient's head was tilted towards right. The patient was admitted under ENT. Repeat X-Ray neck was done. In which it was very evident that the size of the mass have grown to a greater extent. Her platelet count increased (5.58 lakh/mm<sup>3</sup>, Hb- 7.5, thyroid profile was in normal limits. Pre-OP was done on emergency basis.

Patient was operated under general anesthesia and after initial aspiration of the abscess with 16 gauge needle for culture sensitivity and CBNAT tests; a horizontal incision/collar incision was given on the area over the neck swelling and abscess was drained. About 40 ml frank pus was removed from the abscess and all loculi were broken to drain the abscess.

Picture 3

Picture 4

After thorough removal from all sides; a corrugated drain was inserted and sutured with skin. The area was packed. Postoperative follow-up was uneventful.

The Culture report after 72 hours of incubation was sterile (which may be due to the antibiotics given preoperatively) and the CBNAT report was also negative – suggesting the etiology of abscess to be infective.

### Discussion

We report a case of thyroid abscess in a young child who was presented with fever of 2 days duration. Acute Suppurative Thyroiditis (AST) resulting from bacterial infection is uncommon in children and is a potentially life threatening disease because of its close proximity to the trachea [7]. Because of the rarity of the condition the diagnosis of AST is often [8]. The incidence of AST and thyroid abscess is estimated be 0.1-0.7% of surgically treated thyroid pathologies [8]. The untreated case of AST has a very high mortality reaching upto 12% [9].

Some of the predisposing factors for AST include left pyriform sinus fistula, Thyroglossal duct remnant, congenital branchial fistula, blunt trauma and immunocompromised states such as HIV infection or cancer chemotherapy. Other rare predisposing factors include infective endocarditic, tooth abscess, fine needle aspiration, goiter and adenoma [10,11]. Sai Prasad TR., *et al.* state that persistence of pyriform sinus fistula, which extends from pharynx to the thyroid, is most common underlying abnormality

responsible for recurrent suppurative thyroiditis [12]; It facilitates the entry of bacteria associated with upper respiratory tract infection to the thyroid gland. He also stated that the left lobe is more often involved than the right [12,13].

Thyrotoxicosis is an unusual finding in AST and was not seen in our case although Puthiyachirakkal M [14]; has reported a case of thyroid abscess with Thyrotoxicosis. He states that it is more often seen in sub acute thyroiditis of viral etiology. He further states that low uptake thyroid scan in his patient suggested that the thyrotoxicosis is due to an inflammatory or destructive process in the thyroid gland.

Henrik Falhammar, *et al.* is of the opinion that the clinical picture is often different between children and adults and if the diagnosis is made early and also if the patient does not have any underlying disease the outcome is very good, although mortality is still reported. Sometimes other conditions like subacute or chronic thyroiditis, hemorrhage in the thyroid, amiodarone induced thyrotoxicosis, infarction of a thyroid nodule, and rapidly growing thyroid cancers must be considered in differential diagnosis and must be excluded. Early treatment is the key to management as delayed treatment may lead to complications like destruction of the thyroid and the parathyroid glands, spread to other organs, or cause abscess rupture, sympathetic trunk paralysis, vocal cord palsy and fistulae to the trachea or esophagus and may cause necrotizing mediastinitis and pericarditis. None of these were seen in our patient. He further states that most of these patients present with fever and neck pain. Sometimes a preceding upper respiratory tract infection may be present in some cases. Other features include cough, dysphonia, dysphagia, stridor and neck swelling. The pain worsens on extension of the neck. The tender swelling moves with swallowing. Cervical lymphadenopathy may be seen. All these features except cervical lymphadenopathy were present in our patient. For reasons not clear most often the swelling is noticed on left side as was in our case too. With respect to the thyroid status most patients with AST are euthyroid as in our patient. He states that Thyrotoxicosis is a rare feature of AST. In one review, thyrotoxicosis was reported in 11.3% of cases and hypothyroidism in 17% of cases with suppurative thyroiditis. The thyrotoxicosis may be due to the release of preformed thyroid hormone into the circulation.

All these patients must be thoroughly evaluated with routine blood counts which shows leukocytosis, elevated ESR and CRP are usually seen in AST. Thyroid profile must be done in all these cases which is normal in most of the cases. The diagnosis is confirmed by ultrasound scan which shows hypoechoic area mostly in left lobe, perithyroidal hypoechoic space and effacement of the plane between the thyroid and parathyroid tissues. CT scan should also be done in all cases as it has the advantage to give information on extra thyroidal involvement and spread of infection into other spaces of the neck. Other important investigations include Lateral soft tissue X-ray of the neck show the soft tissue edema, tracheal air column, free gas in the tissue and the presence of calcification. It also rules out other abscesses like retropharyngeal abscesses which has a neck extension. Recurrent suppurative thyroiditis needs evaluation for pyriform sinus fistula with barium swallow or direct laryngoscopy [14,15].

All these patients must be kept on antibiotic therapy and when it fails, surgery as incision with drainage can be necessary. Drainage can be repeated if the abscess persists, or if there is deterioration. Drainage is urgent in unstable patients with compromised airways. Open surgery, with total, near total or hemithyroidectomy is usually not needed but can be done in severe cases to relieve pressure symptoms, and later in patients that do not respond to adequate antibiotic treatment and drainage. Although open surgeries must be performed with caution as tissue differentiation may become difficult due to abscess which may lead to complications like damage to tissues in the area as the parathyroid glands and the recurrence nerve. If there is an anatomic defect, surgery for the defect could wait until the abscess has been treated with antibiotic therapy, and often also drainage [16-18].

## Conclusion

Thyroid abscess is acute, highly infectious and a rare condition. Any infection around the region becomes an emergency condition because of its fast manifestation and spread, which needs to be treated in priority. Most of these patients present with fever and neck pain. Sometimes a preceding upper respiratory tract infection may be present in some cases. All these patients must be thoroughly evaluated with routine blood counts, USG and CT scan. These patients must be kept on antibiotic therapy and when it fails, surgery as incision with drainage can be necessary to avoid complications.

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