

A Rare Case of Thyroid Abscess in an Uncontrolled Diabetic Patient

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Abstract: This case report discusses a 61-year-old female with a 10-year history of uncontrolled Type 2 diabetes mellitus, who presented with severe dysphagia, fever, and neck swelling. Upon examination, imaging, and lab results, she was diagnosed with a rare thyroid abscess. The diagnosis was confirmed through ultrasound and non-contrast CT scans, which revealed a cystic lesion with air foci in the thyroid gland. Pus aspiration confirmed a *Citrobacter* infection, and she was treated with IV antibiotics followed by surgical drainage. The patient's history of diabetes, poor glycemic control, and possible undiagnosed colloid adenomatous goitre were considered contributing factors to this unusual condition. Early intervention is crucial to prevent complications, and imaging techniques like USG play a key role in diagnosis and management.

Keywords: Thyroid abscess, infections of thyroid, Suppurative thyroiditis

1. Case

A 61 year-old female known case of uncontrolled diabetes type 2 diabetes mellitus, since 10 years presented with a severe dysphagia, fever with chills and rigor and an acute swelling in the right side of neck for 10 days.

On physical examination, vitals were normal. A tender anterior neck swelling was noted without palpable lymph nodes. No exudates were noted in the oropharynx. A clinical suspicion of the two differentials of parapharyngeal abscess and thyroid abscess were made.

Laboratory tests revealed neutrophilic leucocytosis. Blood chemistry revealed slightly decreased TSH, with normal FT3 and FT4; creatinine of 5.84 mg/dL and FBSL of 420 md/dl with HbA1c value of 8.8%.

Urine analysis revealed significant pyuria and bacteriuria.

USG revealed heterogeneous solid cystic lesion with air foci and dirty shadowing within, in the right lobe of thyroid gland measuring 3.1 x 2.6 cm (AP x TR) in size.

Due to raised creatinine status, a non-contrast CT scan of the neck was performed showing a hypodense area in the right lobe of thyroid gland with air foci within. There was no obvious narrowing of the laryngotracheal airway noted.

Hence after correlation with CT, USG images and clinical and biochemical parameters diagnosis of Thyroid abscess was made.

Patient was referred for USG guided diagnostic aspiration of the lesion. Approximately 3 ml of thick pus was aspirated which was sent for bacteriological analysis. Pus culture grew *Citrobacter* which was sensitive for ampicillin and sulbactam, cefepime and tazobactam, meropenem, tobramycin and

tigecycline. Patient was started on IV antibiotics followed incision and drainage of the abscess.



Axial View
Figure A



Sagittal View
Figure B

Fig a and b: Ultrasound of the right lobe of Thyroid showing a relatively well-defined thick-walled lesion showing internal septae, cystic areas and multiple air foci within.

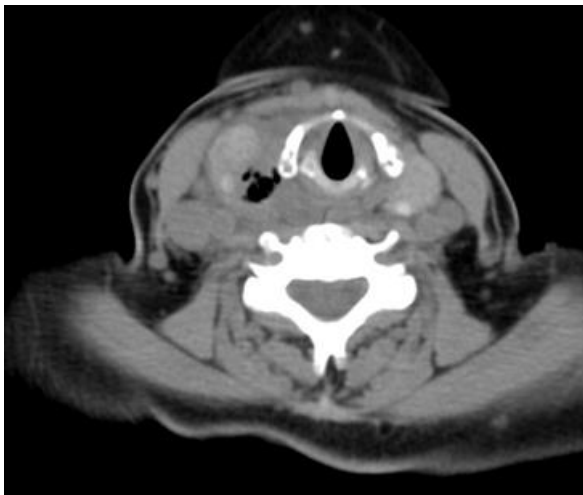


Figure c

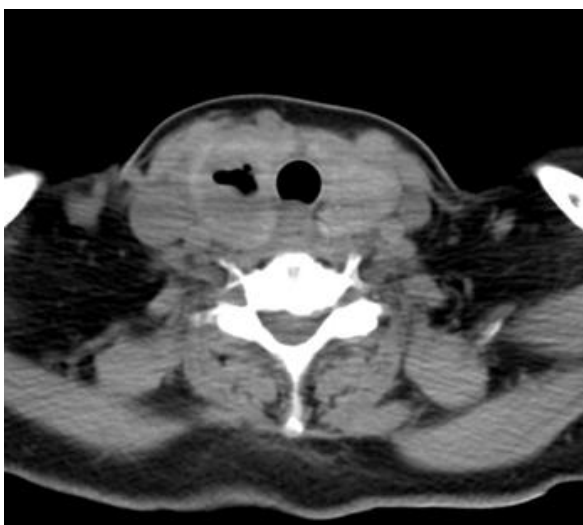


Figure d

Fig c and d: Axial plain CT scan showing a hypodense well defined lobulated lesion in the right lobe of thyroid gland with air foci within.



Figure e: USG guided aspiration showing needle in the abscess cavity



Figure f: USG guided drainage showing 3mL of thick pus

2. Discussion

Acute suppurative thyroiditis/thyroid abscess is rare and occurs due to suppurative infection of the thyroid. The rarity of this condition is attributed to the gland's inherent protective factors, such as rich blood supply, high iodine content, capsular encasement, and good lymphatic drainage^{1,3}.

It needs to be considered in cases of known thyroid disease with history of acute painful neck swelling with fever along with other common differentials like para/retropharyngeal abscess.

Most cases of thyroid abscess (70%) had associated structural abnormality in the thyroid gland or an underlying thyroid disease. This includes the presence of pyriform sinus fistula, goitre, and thyroglossal duct and thyroid carcinoma. Other causes include immunocompromised patients (24%) and those having AIDS, leukaemia, lymphoma, etc.

The infection can spread either via hematogenous route or by lymphatic seeding.

In children and adults, infection of pyriform sinus fistula-a congenital branchial pouch abnormality; is a common cause while in elderly patients, long standing goitre and degeneration in thyroid malignancy could be the possible risk factors.

Our case is of an immunocompetent 61year female with DM for 10 years and currently having a poor glycemic control as well as have pyuria with bacteriuria.

Patient is nearly euthyroid with no known underlying thyroid disease. However, USG of left lobe of thyroid gland revealed few colloid nodules which could raise possibility of underlying undiagnosed colloid adenomatous goitre. This could be a possible risk factor along with suspicious hematogenous dissemination from urinary tract (positive history of UTI) and uncontrolled diabetes mellitus.

Yu et al performed a review of 191 cases of acute suppurative thyroiditis and concluded that as the numbers of immunocompromised patients has been increasing, cases of suppurative thyroiditis are increasing. Their study also suggested that bacterial thyroiditis was observed in euthyroid state (83.1%), while mycobacterial was seen in hyperthyroid (50%) and fungal was prevalent in hypothyroid (62.5%).⁵

Our patient is euthyroid with culture positive for *Citrobacter diversus* bacteria.

Early diagnosis is important in such cases as it can progress fatally and cause complications like retropharyngeal abscess, tracheal obstruction, jugular vein thrombosis and mediastinitis may complicate acute thyroiditis.

Imaging and intervention radiology serve as a powerful tool in establishing diagnosis. USG is a preferred imaging modality in understanding the characteristics of the thyroid swelling as well as give an opportunity of diagnostic/therapeutic aspiration.

Furthermore, in cases of suspected thyroid abscess, plain and contrast-based CT can be done which could reveal characteristics of an abscess. In our case, contrast scan could not be performed due to raised creatinine. However, plain scan showed hypodense area with air foci within in the right lobe of thyroid gland, an auxiliary finding of an abscess. If an iodine scan is done, abscess areas may appear as cold¹.

Antibiotics and incision and drainage of the abscess are the preferred treatment choices. In cases with pyriform sinus fistulas, chemocauterization techniques are being utilized, due to being less invasive¹.

3. Summary

Acute suppurative thyroiditis (thyroid abscess) is a rare condition caused by a suppurative infection in the thyroid gland. Its rarity is due to the thyroid's natural defences, such as rich blood supply, high iodine content, encapsulation, and efficient lymphatic drainage. This condition should be considered when a patient presents with acute, painful neck swelling, fever, and a history of thyroid disease. It is often mistaken for other infections like para/retropharyngeal abscess.

Around 70% of thyroid abscess cases are associated with structural abnormalities or underlying thyroid diseases, such as pyriform sinus fistula, goitre, thyroglossal duct issues, or thyroid cancer. Immunocompromised individuals, such as those with AIDS or leukaemia, are also at higher risk. The infection spreads through the blood or lymphatic system.

In children and adults, infections related to pyriform sinus fistula are common, while in older adults, long-standing goitre or degenerative thyroid cancer are risk factors.

The case described involves a 61-year-old immunocompetent woman with poorly controlled diabetes and a urinary tract infection. She has no known thyroid disease but shows possible undiagnosed colloid adenomatous goitre based on ultrasound findings, which, along with her uncontrolled diabetes and UTI, may have contributed to her thyroid infection.

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