Thyroid Abscess a Rare Clinical Entity: 2 Cases with Different Clinical Presentations

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Abstract

A thyroid abscess is an infrequently encountered condition with a rarity that is attributable to anatomic and physiologic characteristics of the gland that impart a unique quality of infection resistance. Primary thyroid abscess resulting from acute suppurative thyroiditis (AST) is an unusual type of head and neck infection and it’s progression to abscess formation is even more uncommon. Thyroid abscesses have been associated with Pyriform fistula and especially when a left side fluctuant swelling in the thyroid is noted, a fistula must be actively sought for. We hereby present two cases, in individuals of different ages and features, without any fistula.

Introduction

Thyroid gland is quite resistant to infections, which is attributable to its anatomy and physiology. When features of thyroiditis are present, other more common causes of the same such as subacute and chronic thyroiditis are actively sought for and an abscess may be missed altogether. A clinical diagnosis may be difficult sometimes and an USG/CT should be done. Also an FNAC is helpful to differentiate between acute infective thyroiditis and other causes of thyroiditis. Thyroid Abscesses have been associated with Pyriform sinus fistula and especially when a left side fluctuant swelling in the thyroid is noted, a fistula must be actively sought for. We hereby present two cases, in individuals of different ages and features, without any fistula.

Case Presentation

Case 1

A 15 year old male presented with fever, painful swelling in neck and weight loss for 15 days. Physical examination showed an ill defined swelling in anterior triangle of neck in thyroid region (Figure 1). It was very tender on touch.

Laboratory investigations revealed leukocyte count 27000 with 90% polymorphs; hemoglobin level 11g/dl and ESR 103mm/hour. Thyroid profile revealed raised T3, T4 with low TSH suggesting hyperthyroid state. Patient was started on Tablet Neomercazole (30 mg) per day. After ten days T3 came down to below normal range while TSH was still low. Anti Tg/Anti TPO profile were negative.

Ultrasonography of the neck revealed enlargement and altered echotexture of thyroid with increased vascularity on Doppler suggestive of hyperthyroid state. FNAC was done which yielded pus (Figure 4). Smears showed gram positive cocci in clusters. Z.N. stain for AFB was negative.

The diagnosis of acute suppurative thyroiditis with thyroid abscess was made. Patient underwent Incision and drainage which yielded about 20 cc yellowish pus (Figure 5). Culture of pus yielded staphylococcus aureus infection. Fever subsided after 3 days of drainage. TLC counts were within normal range.

Case 2

A 15 year old male presented with fever, painful swelling in neck and weight loss for 15 days. Physical examination showed an ill defined swelling in anterior triangle of neck in thyroid region (Figure 1). It was very tender on touch.

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normal limits. He was discharged home five days after admission. Patient followed up after 1 month with complete recovery (Figure 6) and a euthyroid state.

Antithyroid medications (Neomercazole) have been stopped gradually on tapering dosage and patient is presently off medication.

Case 2

A 7 year old male child presented with neck pain and dysphagia for fifteen days. Physical examination showed an ill defined, tender and fluctuant swelling in thyroid region on left side (Figure 7 and 8).

Laboratory investigations revealed leucocytosis with mixed neutrophilic and lymphocytic picture (50% neutrophils and 42%
Thyroid profile revealed normal T3, T4 with increased TSH levels. Anti Tg/Anti TPO profile were negative.

Ultrasoundography of the neck revealed a heteroechoic area in left lobe of thyroid communicating with a collection adjacent to left lobe of thyroid. Surrounding fat planes were echogenic. Overlying strap muscles, skin and subcutaneous tissue were slightly echogenic and edematous (Figure 9). Barium esophagogram did not show any kind of abnormality including pyriform sinus fistula. CECT neck showed a heterogeneously enhancing left thyroid lobe with few hypodense non enhancing areas within it (Figure 10). This was in continuation with a hypodense collection adjacent to left lobe of thyroid. A radiological diagnosis of left thyroid abscess with contained local spread was made. FNAC of the swelling yielded pus. Z.N. stain for AFB was negative. Gram stain showed gram negative bacilli with few gram positive cocci.

The diagnosis of subacute suppurrative thyroiditis with thyroid abscess was made. Patient underwent surgical operation. Surgical drainage yielded about 5 to 10 cc yellowish pus. Culture of pus yielded Staph aureus infection. Fever subsided 2 days after drainage. She was discharged home four days after admission. Tab levothyroxine (25 micrograms per day) which was started in post operative period, was discontinued after 15 days as patient returned back to euthyroid state.

Discussion

Thyroid abscess and acute suppurative thyroiditis are not common, representing only 0.1% to 0.7% of surgically treated thyroid pathologies [1]. For this reason, diagnosis is often delayed, which may lead to a life-threatening situation [2]. Rarity of this condition is attributable to anatomic and physiologic characteristics of the gland that impart a unique quality of infection resistance. These include rich blood supply and lymphatic drainage, high glandular content of iodine which can be bactericidal and separation of the gland due to total encapsulation from other structures of neck [3].

Since the gland has no external connections the route of infection was a mystery. Takai et al. [4] reported 15 patients with acute suppurrative thyroiditis where a piriform fistula was the apparent route of infection. The pyriform sinus fistula is an internal pharyngeal fistula and has been shown to be the most common underlying abnormality in patients with AST. The fistula ends in or adjacent to the thyroid and allows bacterial infection to develop in or around the gland. The left side is more commonly involved than the right. Thyroid abscesses usually start after upper respiratory tract, pharynx, or middle-ear infections [5]. A case of thyrotoxicosis caused by acute suppurrative thyroiditis after repeated fine-needle aspiration (FNA) has been described. Thyroid infection had possibly been induced by needle-track seeding, because atopic skin favors colonization by S. aureus because of local immunologic deficieny [6]. Rare cases such as fish bone penetration through the esophageal mucosa into the thyroid gland space of the neck after several weeks of swallowing has been reported [7].

The most important causal organisms are Staphylococcus aureus, Streptococcus species, and anaerobes. These infections account for approximately 70% of cases [8]. Other causes include Escherichia coli following urosepsis, Bacteroides fragilis in post-hysterectomy [9], Klebsiella, Salmonella typhoid, Salmonella brandenburg, Eikenella corrodens, Fusobacterium mortiferum [10], and aspergillosis [11]. Rare cases have been reported from Lemierre’s syndrome [12] (post-anginal septicaemia due to anaerobes) and infectious mononucleosis in adolescence [13] presenting with thyroid abscess. Plain x ray may show tracheal displacement and soft tissue swelling over thyroid region. Barium swallow is mandatory to rule out pyriform sinus fistula because it is a common cause of recurrent thyroid abscess and its total resection effectively prevents a relapse. In the acute inflammatory stage, USG showed a hypoechoic lesion spreading in and around the affected thyroid lobe, destruction of the lobe, and abscess formation in the neck. A careful review of the US studies demonstrated that the following findings are characteristic of acute suppurrative thyroiditis: a perithyroidal hypoechoic space, effacement of the plane between the thyroid and perithyroid tissues, and the hypoechoic lesions being unifocal. The former two are not seen in subacute thyroiditis, and hypoechoic lesions in subacute thyroiditis are usually multiple and often bilateral [9].

CT scans demonstrated similar features with clearer anatomical involvement and edema in the ipsilateral hypopharynx. These findings allowed easy diagnosis of AST. However, in the early inflammatory stage USG showed an unclear hypoechoic area in the affected lobe and CT scans showed a nonspecific low-density area. These findings often led to erroneous diagnoses of subacute thyroiditis. In the late inflammatory stage, USG and CT scans often showed atrophy and an unclear hypoechoic or low-density area in and around the affected lobe. To detect pyriform sinus fistulae, barium swallow studies are more sensitive than USG or CT scans [9].

Role of FNAC is to differentiate acute suppurrative thyroiditis and subacute thyroiditis because the management lines are different for these. It can also identify the bacteriological origin i.e. GPC or GNB and thus helps to make a selective antibiotic selection [14].
References


