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Acute suppurative thyroiditis: A case report.

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Abstract

Acute suppurative thyroiditis is a rare but potentially life-threatening endocrine emergency. It represents 0.1 to 0.7% of surgically-treated thyroid pathologies. We report a case of 3 years 11 month old girl who was brought to the hospital by her parents with a history of painful anterior neck swelling of one week duration which was initially the size of the distal phalanx of the child's middle finger and progressively increased to occupying most of the anterior neck. There was a preceding history of fish bone impaction while eating 2 weeks earlier. Within 24 h of admission child was noticed to be febrile (temperature 38.5°C), she had dysphagia, hoarseness and limitation in movement of the head. No history or clinical features suggestive of hyper- or hypothyroidism. Anterior cervical lymph nodes were enlarged and tender. She had a normal weight of 13 kg. Local examination showed a mass at the anterior neck more on the left half, measured 4 cm × 4 cm, no skin changes, no discharge. There was differential warmth and tenderness. It was fluctuant and moves with swallowing. Thyroid ultrasound scan showed normal right lobe; left thyroid gland is enlarged to 4.52 cm × 3.37 cm with a heterogenous echo texture. Thyroid function test was in keeping with euthyroid sick syndrome: TSH 0.3 (0.5-3.7 mIU/L); fT_3 0.3 (1.4-4.2 pg/ml); fT_4 1.4 (0.8-2.0 pg/ml). An assessment of acute suppurative thyroiditis was made and patient was treated with I.V. Cefuroxime and metronidazole, and by the 5th day on antibiotics, a portion of the swelling had become overtly hyperemic and begun to exude pus. The abscess was incised and 4 ml of frank pus was drained. Microscopy, culture and sensitivity of the aspirate revealed klebsiella sensitive to ciprofloxacin, ofloxacin and amoxyl-clavulanic acid. Child's condition improved significantly thereafter and she has since been discharged home and doing well.

Keywords: Acute, Suppurative, Thyroiditis, Fishbone, Impaction.

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Introduction

Acute Suppurative Thyroiditis [AST] is rare. It accounts for 0.1-0.7% of all thyroid diseases [1]. There is no sex predilection [2]. It is more common in children in the first decade of life (about 92% of cases) in whom the left lobe is mostly affected, which is usually due to persistence of left pyriform sinus fistula [3]. The fistula is thought to denote the course of migration of the ultimobrachial body from the 5th pharyngeal pouch to the thyroid [4]. Generally, the thyroid gland is rarely infected because of its rich blood supply and lymphatic drainage and separation from other organs [5]. Infection however can occur where there is persistence of the 3rd and 4th branchial pouch leading to recurrent thyroiditis, and in the presence of thyroid pathology like Hashimoto's thyroiditis and thyroid cancer [5-7]. Less commonly, AST can result from an impacted fish bone in the pyriform sinus [5]. Also direct extension from acute bacterial pharyngitis, recent invasive procedure on the thyroid gland and foreign body impaction in the pharynx or esophagus most commonly fish bone [8-11]. Immunosuppression from HIV infection and malignancy can also predispose to AST. Potential causative agents are diverse and include many bacteria, fungi, parasites or viruses [11]. The most common isolated causal agent of AST is staphylococcus aureus [5,12]. Other bacteria like streptococcus, pneumococcus, salmonella, klebsiella and rarely mycobacterium are important causes of AST [13-15]. Anaerobes like propionibacterium, actinomyces and Peptostreptococcus have also been reported to cause AST [16-18]. Fungal agents like coccidioides immitis, aspergillus, actinomycosis are possible causative agents especially in the immunocompromised [19-22].

Case Report

A 3 year 11 month old girl presented with a left-sided anterior neck swelling of about week duration. It was painful and had progressively increased in size. There was accompanying dysphagia. Though fever was absent at presentation, it was later noticed on the second day of admission. There was no hoarseness, difficulty with breathing or features suggestive of hyper-/hypo-thyroidism.

She swallowed fish bone about a month prior to presentation, immediately after which the girl perceived it was impacted in her throat. Attempts to cough out the fish bone proved abortive. After the transient discomfort in the throat, she apparently became well and continued with her normal activities. She was treated for upper respiratory tract infection at a peripheral center about a week before the onset of neck pain when she had fever, cough and sore throat. Two weeks after the swallowing of fish bone, she started having neck pain, and subsequently neck swelling.

General examination at presentation showed a girl who was irritable, not pale, afebrile and had limitation in movement of the neck. Adjacent anterior cervical lymph nodes were enlarged and tender. She had a normal weight of 13 kg. The vital signs were within normal range.

Local examination of the neck swelling revealed a soft, smooth and tender mass, located on the left side of the neck, measured 5 cm by 4 cm, moved with deglutition, not hyperaemic (initially), fluctuant, and not attached to surrounding structures (Figure 1).

Full blood count revealed normal haemoglobin level of 12 g/dl. Though the total WBC count was not raised (10.6 × 10^9/l), there was neutrophils predominance (70%) with left shift (lymphocytes was 22% of the total WBC). ESR was elevated with a value of 31 mm/h. HIV screening was non-reactive. Thyroid ultrasound scan showed an enlarged left lobe of the thyroid gland (with dimensions of 4.52 cm × 3.37 cm) which contains some cystic areas with internal strands and echoes. The right thyroid lobe and isthmus were normal. Neck x-ray revealed a patent airway and no radio-opaque foreign body. Thyroid function test was in keeping with euthyroid sick syndrome: TSH 0.3

Figure 1. *Acute suppurative thyroiditis few hours after presentation*

Figure 2. *Acute suppurative thyroiditis 5th day on antibiotics*

(0.5-3.7 mIU/L); fT_3 0.3 (1.4-4.2 pg/ml); fT_4 1.4 (0.8-2.0 pg/ml). An assessment of acute suppurative thyroiditis complicated by thyroid abscess was made. The girl was placed on intravenous cefuroxime and metronidazole. By the 5th day on admission, a portion of the swelling had become overtly hyperemic and begun to exude pus (Figure 2). The abscess was incised and 4 ml of frank pus was drained. Microscopy, culture and sensitivity of the aspirate revealed klebsiella sensitive to ciprofloxacin, ofloxacin and amoxyl-clavulanic acid

The child's condition improved significantly thereafter as the pain and neck swelling subsided and she was able to eat unhindered. She has since been discharged home and doing well.

Discussion

The predominance of pyriform sinus fistula, and by extension, acute thyroiditis on the left lobe especially in children is because the right ultimobrachial body does not develop in humans as it atrophies for no known reason [8]. In our patient, the left thyroid lobe was affected as it is in most cases. However, apart from the possibility of an embryological cause of a likely left pyriform sinus fistula, we also postulate that an acquired cause might be from infection originating from the trauma in the pyriform sinus which was inflicted by the fish bone. A similar case of AST following fish bone injury to the throat was reported in an adult [11].

There may be a history of preceding upper respiratory tract infection [9]. Our patient also had one week preceding history of upper respiratory tract infection which may likely be a coincidence in the index case.

The clinical features of AST are mainly those typical of inflammation: painful erythematous neck swelling with differential warmth. There may be dysphagia and limitation in the movement of the head. Regional lymph node enlargement is a common finding. Fever may occur if there is bacteraemia [23]. Patients with AST are usually euthyroid except in a few exceptions (12% were thyrotoxic while 17% were hypothyroid in a study) [24]. Our patient presented with a similar clinical picture and a thyroid function test reminiscent of euthyroid sick syndrome. Full blood count may show leucocytosis with left shift and raised ESR [25].

Fine needle aspiration is important in differentiating AST from subacute thyroiditis through the cytological findings. It is also useful in identifying the causative agent and selecting appropriate antibiotic. It can also be therapeutic by helping to relieve pressure from a compromised trachea [1].

Thyroid radionuclide uptake may show low (especially at initial presentation) or normal values [26,27]. Thyroid ultrasound findings may range from presence of hypoechoic process (at the initial stage) to obvious cystic areas (abscess in the later stage). The border between the thyroid and perithyroid tissues may also be effaced [28]. Computerized tomography is helpful in locating the thyroid abscess, but it is reserved for unusual situations [29].

Barium swallow can be performed in patients with AST, particularly those with left side affectation, to rule out possibility of a pyriform sinus fistula. Barrium swallow has been said to be highly sensitive (about 89-97%) in detecting the fistulae [28,30]. Fistula can also be detected on thyroid ultrasound as an echogenic tract, during a CT scan procedure when the patient is asked to blow into a syringe (trumpet maneuver) and transnasal flexible fiberoptic laryngoscopy [1,31].

AST's closest differential is Subacute Thyroiditis (SAT) because both present with swollen and tender thyroid, fever, elevated ESR and reduced radioactive iodine uptake. However in SAT, there is usually no preceding history of upper respiratory tract infection, thryroiditis is usually bilateral and non-erythematous, features of thyroxicosis are more common as thyroid hormones are high. Fine needle aspiration would not yield pus but exudate rich in lymphocytes, macrophages and giant cells. SAT is also not associated with pyriform sinus fistula. Response to glucocorticoid treatment is remarkable in SAT unlike in AST [27]. Other differentials are Hashimoto's and Reidel's thyroiditis, thyroid neoplasms, and retropharyngeal abscess [27].

AST is treated with appropriate parenteral antibiotics and surgical drainage [32,33]. CT-guided percutaneous catheter drainage is less invasive, effective and safe [34]. Excision of the fistula is paramount to prevent recurrence of AST [35]. Instillation of a chemocauterising agent is a less invasive way of ablating the fistula and has shown satisfactory outcomes [36]. Newer, reliable and minimally invasive modalities of pyriform sinus fistula treatment include transoral video-laryngoscopic surgery and endoscopy assisted surgery [37,38].

If a thyroid abscess is not promptly drained, it can rupture into the neck, and extend into the chest (causing necrotizing mediastinitis and pericarditis), trachea or oesophagus, which can lead to death. Permanent hypothyroidism can ensue from extensive thyroid gland damage [8,39,40].

Conclusion

AST is a rare and usually runs a mild course, but may occasionally prove fatal. Thus prompt diagnosis and treatment is vital. Pyriform sinus fistula should be suspected in all paediatric cases. Rare risk factors like fish bone impaction in the throat should be considered during history-taking and examination in patients with AST but more research is necessary to establish the extent of its significance as an etiologic/risk factor.

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