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Case Report

Thyroid abscess: A report of six cases

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Abstract:

Thyroid abscess is a rare clinical entity and infrequently encountered. We hereby present a review of six cases-four in the paedriatic and two in the adult age group who presented to our hospital which is a Tertiary care referral centre with thyroid abscess and the management varying from serial aspiration to incision and drainage of abscess. A brief review of literature is also included.

Key words: *Thyroid abscess; thyroid tuberculosis; suppurative thyroiditis*

Introduction:

Thyroid abscess is not a commonly encountered condition in the Otolaryngological outpatient department. The gland is resistant to infection[1] because of its rich blood supply, the capacity of lymphatic drainage, the inhibiting effect of the gland's iodine content and the protective fibrous capsule of the gland. A prompt diagnosis is important because it may progress rapidly into a life- threatening condition[2] often necessitating urgent airway management. Further a different approach of treatment contrary to others abscess[3] which is a multidisciplinary one based on the physical ûndings, ultrasonography, fine needle aspiration, CT scan, Barium swallow, microbiological and endocrinological evaluation. Surgical management may vary from a simple incision and drainage (I&D) of abscess to a hemithyroidectomy often leading to long term thyroid supplement[1]. Due to the rarity of the condition this study was undertaken at our Tertiary care referral institution.

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Case Reports:

We analyzed prospectively 6 consecutively treated patients diagnosed with thyroid abscess between August 2011 and July 2012 at BPKIHS, a Tertiary care referral centre in the eastern Nepal. All of the cases were admitted, investigated and treated with intravenous ceftriaxone (50mg/kg body wt. q12hrs) and metronidazole (10mg/kg body wt.q8hrs), serial daily aspiration of the pus and I&D if not resolved. Data analysed were clinical, laboratory findings and treatment response.

Among the 6 cases, four were below 6 years of age whereas two were in the third decade of life. Four were males and two were females. All of them presented with swelling and pain over anterior neck for variable short duration. Recurrence was seen in one of the cases and she had undergone I&D of the abscess

in a nearby clinic 10 years ago (Table-I). There was leucocytosis in all cases with raised neutrophils in five and high normal lymphocyte count and raised ESR with PCR positive in one. Montaux test was positive in one and all were Euthyroid. On culture of pus Staph. aureus and E. coli were isolated in one each whereas the remaining four were sterile. Ultrasonography and CT scan was diagnostic in all of the cases. Five of them underwent serial aspiration of the pus with Incision and Drainage whereas one responded to serial aspiration alone. (Table-II)

Table-I

Summary of the clinical findings

	Age	Sex	Presentation	H/o Recurrence	H/o Urti
Case 1	3 yr	M	Swelling and Pain over ant. neck-10 days	No	Yes- 2 weeks back
Case 2	29 yr	F	Swelling and Pain over ant. neck-1 week	Yes- 10 years ago.	No
Case 3	4 yr	M	Swelling and Pain over ant. neck-12 days	No	Yes– 2 days back
Case 4	5 yr	F	Swelling and Pain over ant. neck-20 days	No	No
Case 5	6 yr	M	Swelling and Pain over ant. neck-10 days	No	No
Case 6	21 yr	M	Swelling and Pain over ant. neck- 3 weeks	No	No

Table-II

Summary of the management

	Blood	Montaux	Pus c/s	Radiology	Treatment
Case 1	TC-18,000 N-85%	Negative	*Staph. aureus*	USG-heterogenous hypoechoic lesion in left lobe of thyroid of 36.8 mm x 32.3 mm	Serial aspiraton followed by I&D
Case 2	TC-13,000 N-75%	Negative	Sterile	USG- hypoechoic lesion of 3 cm x 2.5 cm x 2 cm with mobile internal echoes in left lobe of thyroid gland	Serial aspiraton
Case 3	TC-30,000 N- 85%	Negative	Sterile	USG- multiple irregularly outlined areas of fluid collection with internal echoes within left lobe of thyroid, largest pocket being 3.5ml.	Serial aspiraton followed by I&D
Case 4	TC- 17,400 N-78%	Negative	E.coli	USG- large heterogenous lesion predominantly hypoechoic 38x32 mm in left lobe of thyroid suggestive of abscess left lobe of thyroid.	Serial aspiraton followed by I&D
Case 5	TC-16,800 N-75%	Negative	Sterile	CT scan- a well defined irregular lesion in left lobe with heterogenous enhance-ment,septation and non enhancing area.	Serial aspiraton followed by I&D
Case 6	TC-14,100 L-40% ESR-56 PCR- Positive	>10 mm	Sterile	USG-a heterogenous lesion of 3.5 cm x 2.8 cm x 2.1 cm with mobile internal echoes and no internal vascularity in the midline of neck. Left lobe of thyroid gland enlarged with multiple hypoechoic area.	Serial aspiraton followed by I&D

Figure 1, 2: *Aspiration revealed frank pus in the 5-year-old female child*

Figure 3: *Thyroid abscess in 21-year-old male*

Figure 4: *Aspiration revealed frank pus*

Discussion:

The thyroid gland is relatively resistant to infections. An example of the gland's resistance to infection is the rare occurrence of infection following thyroid surgery.[4] Schweitzer et al[5] in 1981 reported only 39 cases of thyroid abscess in the medical literature since 1950 on 29 children.

It is most common in paediatric population[3] and may be associated with pyriform sinus fistula, branchial arch fistula or thyroglossal cyst. Similar findings were seen in this series where four of the six cases were below six year of age but however no fistula were detected in either of the cases. In adult population there may be multiple etiologies such as direct trauma from foreign bodies, extension from nearby anatomic structures such as thyroglossal fistula, fourth branchial arch fistula, fine needle aspiration or from an esophageal carcinoma. Rarely haematogenous spread from a distant site in intravenous drug abuser & immune compromised individual may be seen. One of the cases in our series was a female in late twenties but however this was her second presentation. She had visited a nearby clinic 10 years back for similar illness and incision and drainage was done then. In spite of investigation no apparent route of infection was been detected. She is on regular follow up and no recurrence has been noted.

In a 17 year study of 191 patients from 1980 to 1997 of acute suppurative thyroiditis isolated 130 micro-organisms of which 74% were pure culture[6]. Common isolates were Gram-positive aerobes (39%), Gram-negative aerobes (25%), fungi (15%), anaerobes (12%, mostly in mixed culture) and mycobacteria (9%). Isolated pathogens were Streptococci, Staphylococci, Pneumocystis carinii and mycobacteria. Similarly in this series Staph. aureus was isolated in one case and E. coli in the other, sterile culture were seen in the other three- which could probably have been due to anaerobes or institution of antibiotics prior to the culture.

The most common clinical presentation are acute onset of pain and swelling often

preceded by URTI. This is also similar in our series where all the patients presented with pain and swelling in anterior neck whereas preceding URTI was present only in two of the cases.

Two conditions deserve special mention - thyroid abscess due to TB and thyroid abscess due to pyriform sinus fistula. Tuberculosis of the thyroid gland is extremely uncommon with very few cases reported so far. Thyroid tuberculosis is usually diagnosed by physicians in 0.1 - 1% of cases. But during autopsy this disease is found much more often (2 to 7% of cases)[7]. Thyroid abscess due to TB[4] may occur mainly in two forms- Miliary spread to the thyroid as a part of generalized dissemination or focal or caseous tuberculosis of the thyroid. In this case though pus for AFB staining and Montaux test was sent, it was negative in all of the cases except one where there was raised ESR, high normal differential lymphocyte count, positive PPD and PCR all in favour of tuberculous thyroiditis.

Thyroid abscess due to pyriform sinus fistula[3] has its onset in infancy or childhood, left-sided involvement with frequent recurrences. Investigations done are routine investigations, USG of neck, Thyroid function test, Barium swallow, CT Neck in case of recurrent thyroid abscess, Fistulogram in case of fistula, thyroid scan and oesophagoscopy.

The treatment options are to secure airway (if Laryngeal edema), intravenous antibiotic, serial aspiration (USG guided), Incision & drainage, hemithyroidectomy[8], repair of fistula[9] and L-thyroxine replacement therapy. In this case serial aspiration sufficed in one of the cases whereas serial aspiration followed by incision and drainage of abscess was required in the other five. Treatment of thyroid tuberculosis is complex: administration of anti-tubercular drugs is combined with surgical removal of the affected parts of thyroid gland or surgical drainage. Repeated puncture drainage and antitubercular drugs are the least invasive mode of treatment. Lately treatment with the antitubercular drugs has been recognized as the preferred method[7]. In one case following the serial aspiration patient was put on antitubercular therapy. He is on follow up and a good response has been noted.

Untreated thyroid abscess may lead to several complications. L-thyroxine replacement therapy may be required in those with transient or prolonged hypothyroidism that can occur in individuals with severe, diffuse inflammation and necrosis of the gland[10]. Local complications also include: vocal cord paralysis, abscess rupture or extension into adjacent sites and organs (anterior mediastinum, trachea, esophagus), thrombosis of the internal jugular vein (Lemiere's syndrome), and extrinsic compression of the trachea[11]. None of the above mentioned complications were seen in either of our patients. This could be due to timely presentation and their prompt and appropriate intervention.

Conclusion:

Thyroid abscess requires thorough history, clinical examination and multidisciplinary management approach to prevent morbid complications and recurrence. Tuberculosis should be included in the differential diagnosis of the thyroid abscess.

References:

1. Imai C, T Kakihara A, Watanabe Y, et al. Acute suppurative thyroiditis as a rare complication of aggressive chemotherapy in children with acute myelogenous leukaemia. Pediatr Hematol Oncol 2002; 19: 247–53.
2. Cannizzaro et al klebsiella pneumoniae pulmonary infection with thyroid abscess: report of a case. Surg Today 2008; 38: 1036–39.

3. Schneider UR, Birnbacher S, Schick W, Ponhold E. Recurrent suppurative thyroiditis due to pyriform sinus fistula: Eur J Pediatr 1995; 154: 640–2.

4. R.H. Nishiyama,.Overview of surgical pathology of the thyroid gland. World J Surg 2000; 24: 898-906.

5. Schweitzer VG, Olson NR. Thyroid abscess. Otolaryngol Head Neck Surg 1981; 89(2): 226-9.

6. E.H. Yu, W.C. Ko, Y.C. Chuang, T. J. Wu, Suppurative Acinetobacter baumanii thyroiditis with bacteremic pneumonia: case-report and review 1998 Clin Infect Dis; 27: 1286-90.

7. Sunita Sanehi, Chandrashekhar Dravid, Neena Chaudhary, A. K. Rai. Primary thyroid tuberculosis. Indian J Otolaryngol. Head Neck Surg 2007; 59: 154-156.

8. Berger SA, Zinszein J, Villamena P, Mittman N. Infectious diseases of the thyroid gland. Rev Infect Dis 1983; 5: 108-18.

9. Yamashita H, Noguchi T, Takahashi M. Reccurent cervical abscess due to piriform sinus fistula. J Larygol Otol 1995; 109: 886–8.

10. Itzhak Brook. Microbiology and management of acute suppurative thyroiditis in children. International J Pediatr Otorhinolaryngol 2003; 67: 447-51.

11. Lough DR, Ramadan HH, Aronoff SC. Acute suppurative thyroiditis in children, Otolaryngol Head Neck Surg 1996; 114: 462-5.