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Case Reports

ACUTE SUPPURATIVE THYROIDITIS PRESENTING AS A PAINLESS THYROID SWELLING

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ABSTRACT

Acute suppurative thyroiditis is a rare disorder. We saw a 24 year old man with this condition that present atypically. The patient had a non-tender thyroid enlargement associated with fever and leukocytosis. FNA cytology clinched the diagnosis. The abscess was associated with *Klebsiella pneumoniae* septicemia and required surgical drainage after failing antibiotic therapy.
Keywords: Acute suppurative thyroiditis, Klebsiella pneumoniae septicaemia
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INTRODUCTION

Thyroid diseases are common in primary care, especially hyperthyroidism (mostly due to Grave's disease) and thyroid nodules. With regard to thyroiditides, the general practitioner is likely to encounter a spectrum of conditions which were traditionally classified based on time course of the disease into the acute, subacute and chronic thyroiditis.[1] Chronic lymphocytic thyroiditis or Hashimoto's thyroiditis is remarkably common, the subacute variety (typified by De Quervian's thyroiditis) is occasionally seen, but the acute microbial thyroiditis or acute suppurative thyroiditis is exceedingly rare. We present a case of acute suppurative thyroiditis to demonstrate the diagnostic challenge involved. The mortality associated with this disease, if left untreated, may approach 100%.[2]

THE PATIENT

GBL, a 24-year-old engineering trainee was seen in the primary care clinic complaining of high fever for 5 days associated with body pains. He was a non-drinker and non-smoker and was previously well. On the 6th day he noticed a painless swelling of the right side of the neck. He was febrile with a temperature of 38.9 ^{o}C. Examination of the neck revealed a mildly tender, 3-cm nodule in the right side of the neck which moved with swallowing. Clinically he was euthyroid. The rest of the systems examination was essentially normal.

He was admitted on the evening of the 6th day with chills, rigors and vomiting. Investigations done in the outpatient and in the ward revealed neutrophil leucocytosis, microscopic haematuria, hyponatraemia and mild hepatitis. His HIV test and hepatitis serological tests were negative.

Further investigations and progress in the ward

His urine culture was negative but blood culture grew *Klebsiella pneumoniae*. Spiral CT scan of neck, chest and abdomen was done. CT scan of the neck showed a large ill-defined hypodense mass in the region of the thyroid displacing the trachea to the left, extending from the retropharyngeal region till sternal notch level with involvement of the right para-laryngeal space, pre-vertebral space and right thyroid lobe. Radiologically the mass was consistent with cystic change or abscess formation. A differential diagnosis would be an aggressive infiltrating tumour (see Figure 1). CT scans of the chest, kidney and pelvis were normal. Fine needle aspiration cytology (FNAC) right thyroid nodule obtained predominantly acute inflammatory cells suggestive of abscess formation. No malignant cells were identified.

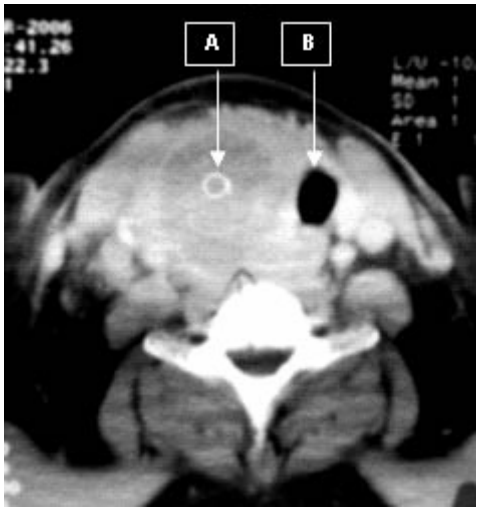
The fever subsided after a few days of intravenous sulperazone but recurred and prompted the consideration of a surgical option. Exploration and drainage of the thyroid abscess was finally done one week after admission. Intra-operatively, pus was found in the thyroid gland and tracking up the neck into the parapharyngeal spaces. Tissue obtained intraoperatively was consistent with acute thyroiditis with foci of suppuration. Culture of the pus from thyroid grew *Klebsiella pneumoniae*.

Postoperatively he developed a discharging sinus over the wound site on the right side of the neck. This finally healed with antibiotics and daily dressings. Further radiological studies were not done. The thyroid hormones which were elevated reverted to normal a few weeks later.

Table 1. Laboratory investigations

Laboratory investigations	Outpatient	Inpatient	Normal range
Haematology			
Hb	14.3	13.8	13-18 g/dL
WBC	22.9 (neutrophils 84%)	17.0 (neutrophils 79.8%)	4-11 x $10^3/\mu L$
Platelet	188	244	150-450 x $10^3/\mu L$
ESR	65	105	<21 mm/hour
Urinalysis			
Protein	2+	4+	
Glucose	Negative	1+	
Blood	1+	1+	
pH	6.0	6.0	
S.G	1.030	1.025	
Ketones	1+	1+	
Biochemistry			
Sodium	131	131	135-145 mmol/L
Chloride	94	93	95-110 mmol/L
Urea	3.5	4.9	2.5-8.0 mmol/L
Creatinine	71	97	50-120 μmol/L
Total protein	87	79	60-82 g/L
Albumin	45	34	35-50 g/L
Globulin	42	45	20-39 g/L
Albumin/globulin ratio	1.1	0.8	1.1-2.6
Alkaline phosphatase	139	135	30-120 U/L
Total bilirubin	56	52	<17 μmol/L
GGT	328	318	15-85 U/L
AST	62	23	15-37 U/L
ALT	142	119	30-65 U/L
HbA_{1c}	-	5.3%	-
Serology			
Free thyroxine	25	-	9.0-25.0 pmol/L
Total T4	-	14.29	4.5-12.0 μg/dL
TSH	1.71	0.44	0.4-4.7 mIU/L
Thyroid microsomal antibody	-	8.6	0-12 IU/mL
Thyroglobubin antibody	-	90.3	0-34 IU/mL
HIV 1 & 2	Non-reactive	-	-
HBs antigen	-	Non-reactive	-
HBs antibody	-	90.1	-
Total HAV antibody (IgG &	-	Non-reactive	-
IgM)	-	Non-reactive	-
Hepatitic C antibody	-	Negative	-
Dengue IgM	-	Negative	-
Dengue IgG	-	Negative	-

Figure 1. Spiral CT of neck. (A) Right thyroid mass, (B) trachea shifted to the left



DISCUSSION

Acute suppurative thyroiditis is an acute painful condition of the thyroid associated with bacterial, fungal, mycobacterial or parasitic infection. It presents typically with a tender swollen gland associated with fever, leucocytosis and a raised ESR. The cause of the condition can be due to haematogenous spread from a distant focus, spread via the lymphatics, rarely introduction of bacteria during a fine needle aspiration,[3,4] direct inoculation at the time of thyroid surgery, spread via an infected thyroglossal duct and local spread through a piriform sinus fistula.[4] It is believed that the majority of acute suppurative thyroiditis in children is due to spread via a left piriform sinus and they are prone to recurrent episodes of infection. Piriform sinus fistula refers to a persistent third or fourth branchial pouch which typically presents as a congenital sinus tract that originates from the piriform sinus.[5] The sinus tract is usually diagnosed by barium study or direct endoscopic methods. Ultrasound, CT scan and MRI may aid in the diagnosis. During imaging the diagnosis can be aided by the so-called trumpet maneuver.[6] FNAC remains the best single laboratory test in the evaluation of acute suppurative thyroiditis and will be diagnostic in most cases[2].

Microbiological agents involved in acute bacterial thyroiditis typically include the Staphylococci, Streptoccoci and the Enterobacteria.[7] On rare occasions the fungi were involved, although in this immunocompromised era more of these cases had been reported.[8-11] Parasitic infection of the thyroid is indeed a curiosity and a true rarity. A variety of clinical pattern of community-acquired *Klebsiella pneumoniae* septicemia had been described,[12] , however those associated with acute suppurative thyroiditis were distinctly rare.[13]

Life threatening complications include tracheal compression due to enlarging mass, vocal cord paralysis,[14] and abscesses spreading into the retropharyngeal space and mediastinum[15]. A transient phase of hyperthyroidism due to outpouring of thyroid hormone in conjunction with massive destruction of the tissues associated with the abscess had been described.[16]

The clinical presentation of the case was rather unusual as the thyroid was not tender. The thyroid is normally tender in acute thyroiditis and exquisitely tender in subacute granulomatous thyroiditis (De Quervain thyroiditis). A non-tender thyroid swelling would suggest a nodular disease or Hashimoto's thyroiditis. The non-tender nature of the thyroid in this case may be due deep-seated site of infection and that it was not confined but was spreading into the deeper planes. A high index of suspicion is necessary when the presentation is atypical. FNAC will clinch the diagnosis, as in this case. FNA biopsy was also useful to rule out malignancy and other infections like tuberculous thyroiditis.[17-19] The treatment of acute suppurative thyroiditis usually involved the administration of antibiotics. It is only occasionally that surgical drainage of the abscess will be required when conservative treatment failed. The source of the infection was indeterminate in this case, but the respiratory tree and the urinary tract were prime suspects.

CONCLUSION

We like to highlight the fact that if one encounters a patient with an enlarging neck mass, whether tender or not, associated with fever, leukocytosis and raised ESR, one should consider the diagnosis of acute suppurative thyroiditis

REFERENCES

1. Slatosky J, Shipton B, Wahba H. Thyroiditis: differential diagnosis and management. *Am Fam Physician.* 2000; 61(4):1047-52, 1054 [PubMed] [HTML]
2. Cameron JL. Current Surgical Therapy. 8th ed. Elsevier Mosby; 2004: 600-601
3. Nishihara E, Miyauchi A, Matsuzuka F, *et al*. Acute suppurative thyroiditis after fine needle aspiration causing thyrotoxicosis. *Thyroid*. 2005;15(10):1183-7 [PubMed]
4. Chen HW, Tseng FY, Su DH, *et al.* Secondary infection and ischemic necrosis after fine needle aspiration for a painful papillary thyroid carcinoma: a case report. *Acta Cytol.* 2006;50(2):217-20 [PubMed]
5. Jeyakumar A, Hengerer AS: Various presentations of fourth branchial pouch anomalies. *Ear Nose Throat J.* 2004; 83(9):640-2, 644 [PubMed]

6. Wang HK, Tiu CM, Chon YH, *et al.* Imaging studies of pyriform sinus fistula. *Paediatr Radiol.* 2003;33(5):328-33 [PubMed]
7. Brook I. Microbiology and management of acute suppurative thyroiditis in children. *Int J Pediatr Otorhinolaryngol*. 2003;67(5):447-51 [PubMed]
8. Ayala AR, Bassaria S, Roberts KE, *et al.* Aspergillus thyroiditis. *Postgrad Med J.* 2001;77(907):336 [PubMed]
9. Vandjme A, Pageaux GP, Bismuth M, *et al*. Nocardiosis revealed by thyroid abscess in a liver-kidney transplant recipient. *Transpl Int.* 2001;14(3):202-4 [PubMed]
10. Kiertiburanakul S, Sungkanuparph S, Malathum K, *et al.* Comcomitant tuberculous and cryptoccoal thyroid abscess in a human immunodeficiency virus-infected patient. *Scand J Infect Dis.* 2003;35(1):68-70 [PubMed]
11. Da'as N, Lossos IS, Yahalom V, *et al.* Candida abscess of the thyroid in a patient with acute lymphocytic leukemia. *Eur J Med Res.* 1997;2(8):365-6 [PubMed]
12. Ko WC, Paterson DL, Sagnimeni AJ, *et al.* Community-acquired *Klebsiella pneumoniae* bacteremia: global differences in clinical pattern. *Emerg Infect Dis.* 2002 Feb;8(2):160-6 [PubMed]
13. Echevarria Villeges MP, Franco Vicero R, Salano Lopez D, *et al.* [Acute suppurative thyroiditis and Klebsiella pneumoniae sepsis. A case report and review of the literature.] *Rev Clin Esp.* 1992;190(9):458-9 [PubMed]
14. Boyd CM, Esclamado RM, Telian SA. Impaired vocal cord mobility in the setting of acute suppurative thyroiditis. *Head Neck.* 1997;19(3):235-7 [PubMed]
15. Omolski A, Forlot J, Lazecka K, et al. [Acute suppurative thyroiditis - laryngologic problem.] *Otolaryngol Pol.* 2005;59(6): 911-4 [PubMed]
16. Walsh CH, Dunne C. Hyperthyroidism associated with acute suppurative thyroiditis. *Ir J Med Sci.* 1992;161(5):177 [PubMed]
17. Takami H, Kozakai M. Tuberculous thyroiditis: report of a case with review of the literature: *Endocr J.* 1994;41(6):743-7 [PubMed]
18. Al-Mulhim AA, Zakaria HM, Abdel MS, *et al.* Thyroid tuberculosis mimicking carcinoma: report of two cases. *Surg Today.* 2002;32(12):1064-7 [PubMed]
19. Das DK, Pant CS, Chachra KL, *et al.* Fine needle aspiration cytology diagnosis of tuberculous thyroiditis. A report of eight cases: *Acta Cytol.* 1992;36(4):517-22 [PubMed]

WEBSITES, GUIDELINES AND MORE: THYROID

American Thyroid Association http://www.thyroid.org/professionals/publications/guidelines.html
Published five peer guidelines for the diagnosis and management of thyroid disease.

Guidelines from British Thyroid Association http://www.british-thyroid-association.org/guidelines.htm
Use of thyroid function tests [2002] [PDF] (565Kb)
Management of thyroid cancer in adults [2002]. Full guideline [PDF] (910Kb); For primary care physician [PDF] (46Kb)

Thyroid Disease Manager http://www.thyroidmanager.org/
This website offers an "up-to-date analysis of thyrotoxicosis, hypothyroidism, thyroid nodules and cancer, thyroiditis, and all aspects of human thyroid disease and thyroid physiology." A textbook [HTML] is available for free download.

Systematic Reviews
Abraham P, Avenell A, Watson WA, *et al.* Antithyroid drug regimen for treating Graves' hyperthyroidism. *Cochrane Database of Systematic Reviews* 2005, Issue 2. Art. No.: CD003420. DOI: 10.1002/14651858.CD003420.pub3
Bottomline: "Lower doses of anti-thyroid drugs may be just as effective for people with Graves' hyperthyroidism, but with fewer adverse effects." [HTML]

Abraham P, Avenell A, Park CM, *et al.* A systematic review of drug therapy for Graves' hyperthyroidism. *Eur J Endocrinol.* 2005;153(4):489-98
Bottomline: "The titration regimen appeared as effective as the Block-Replace regimen, and was associated with fewer adverse effects." [HTML]

Castro MR, Caraballo PJ, Morris JC. Effectiveness of thyroid hormone suppressive therapy in benign solitary thyroid nodules: a meta-analysis. *J Clin Endocrinol Metab.* 2002;87(9):4154-9
Bottomline: "Suppressive thyroid hormone therapy for longer than 6 months is associated with a trend toward a reduction of more than 50% in volume of benign thyroid nodules, without achieving statistical significance." [HTML]

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