Case Report of Thyroid Abscess in a Patient with Multinodular Goiter

[†]Akinlade AT, Ogbera AO
Department of Medicine,
Lagos State University Teaching Hospital (LASUTH), Ikeja
[†]dratakinlade@yahoo.com

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Abstract: We present the case of a 45-year old auxiliary nurse referred because of a three-year history of multinodular goiter that in a few days before presentation increased in size and became very painful with associated hoarseness, and fever. She was treated for pulmonary tuberculosis (PTB) 2 years earlier. She had no thyrotoxic or hypothyroid symptoms and had no history of hypertension or diabetes.. Her last confinement was 1985, though still premenopausal.
The goiter progressively became bigger, more painful (with little relief from generous analgesic) and fluctuant. A diagnostic aspiration yielded significant pus collection that was sterile on culture. An incision and drainage was done which drained copious amounts of pus. She had antibiotics and was subsequently discharged. Her thyroid function test showed euthyroid values. The thyroid ultrasound scan showed grossly enlarged and heterogenous thyroid gland, which had irregular ill-defined wall margins. Her fine needle aspiration cytology (FNAC) report following drainage of the abscess showed features of a benign thyroid mass. Chest X-ray revealed no active tuberculous lesions. Subsequent follow-up at the outpatient clinic revealed a drastic reduction in the size of the goiter.

Keywords: thyroid abscess, multinodular goiter, FNAC

Introduction

Bacterial thyroid abscess is an uncommon condition. In addition, we have not been able to find a report of thyroid abscess in a patient known to have multinodular goiter in the literature. The microbiologic etiology of this process is usually a Gram-positive organism such as *Staphylococcus* or *Streptococcus* species. Gram-negative suppurative thyroiditis is rarely reported [(1)]. Most cases of thyroid abscess reported in the literature have been as a complication of acute suppurative thyroiditis, which is a rare clinical form of thyroiditis and with the patients having no previous history of thyroid disease [(2,3)].

Case Report

Mrs. O.A is a 45-year old auxiliary nurse who was referred to our outpatient clinic from a General Hospital because of a week history of increasing swelling and pain in her goiter. She had had a goiter for 3 years prior to this. There was no history of fever, breathlessness or cough, but had hoarseness and weight loss. She had no history suggestive of hyperthyroidism or hypothyroidism. She had no prior history of any invasive procedure in her neck. She had completed an 8-month treatment for pulmonary tuberculosis 18 months before her present illness and had appendicectomy in 2003. She was not diabetic or hypertensive and had no family history of thyroid disease.
Physical examination showed a middle-aged woman, writhing in pain, not febrile, but mildly pale. Had a WHO grade 3 goiter which was very tender but without differential warmth or surrounding lymphadenopathy. No clinical features of thyrotoxicosis.
Her pulse rate was 90 beats/min and the blood pressure was 130/80mmHg.
Her chest examination revealed no abnormality.

Her thyroid function test results were within normal limits. The thyroid ultrasound scan showed grossly enlarged and heterogenous thyroid glands with irregular ill-defined wall margins. The right lobe measured 37.1mm x 27.1mm while the left lobe measured 49.2mm x 45.5mm. The complete blood count showed a packed cell volume of 28%, white cell count of 9.0 x 109/L with neutrophil and lymphocyte differential counts of 72 and 25% respectively. She screened negative to HIV and her chest radiograph showed no active infective lesions.

The goiter became progressive bigger and more painful, with little relief from the cocktail of analgesics given her. The swelling was noticed to have pus collection by the 14th day of admission. This drained copious pus when incision and drainage were done and with antibiotics, she had a dramatic relief and improvement. Culture of the pus was sterile.

Her FNAC (done following discharge from admission) report showed smear preparations consisting of macrophages, hemosiderin-laden microphages, lymphocytes and follicular cell with regular nuclei. All were seen against a background of colloid. This excluded malignancy.

She has continued to do well at follow-up in our outpatient clinic.

Discussion

Thyroid abscess is uncommon because of the characteristics of the thyroid gland such as total encapsulation, secluded anatomic position, an iodine-rich environment, extensive lymphatic drainage, and abundant blood flow from bilateral, anastamosing superior and inferior arteries that provide protection by hindering bacterial invasion and growth.[4,5)] Nonetheless, hematogenous spread from a distal site of infection is still considered to be the most common cause of thyroid infection, even though like in this case, the exact infectious source or pathway is frequently unknown.[6-8]

Thyroid abscess formation have also occurred as complications of congenital abnormalities, such as pyriform sinus fistula[9]; direct trauma, such as fine-needle aspiration[10]; and trauma caused by foreign bodies, such as fish bones[11] and chicken bones.[12]

Several reviews have described streptococci and staphylococci as the two most common causes of acute suppurative thyroiditis (13-15). Notwithstanding these findings, a host of other organisms have been implicated and identified in thyroid infection and abscesses may also be polymicrobial in nature.[16)]

There has also been a shift in the frequency of other microbiologic causes. Specifically, there have been large decreases during the past century in the prevalence of *Salmonella* species (40 cases, decreasing to 0 in the current review), anaerobes (8 cases, decreasing to 1 case in the current review) and *Mycobacterium tuberculosis* (21 cases, decreasing to 5 in the present review) as causes of thyroid abscess (1). How far this assertion will hold true for developing countries which still bear a huge burden of such infectious diseases as tuberculosis and HIV/AIDS remains to be seen. For example, a recent autopsy study of 100 consecutive Brazilian acquired immunodeficiency syndrome (AIDS) patients with "abnormal" thyroids revealed *M. tuberculosis* in 23%, cytomegalovirus in 17%, *Cryptococcus* species in 5%, *Mycobacterium avium* in 5%, and *Pneumocystis carinii* in 4%.[17] Other pathogens that have infected the thyroid in the setting of HIV infection include *Rhodococcus equi,*[18]*Streptococcus pneumoniae,*[19] as well as AIDS-related neoplasms, such as Kaposi's sarcoma and lymphoma.[17]

Thyroid abscesses occur more commonly in women than in men, especially in women 20 to 40 years of age, though may range between 18 months and 78 years [1, 10, 20]
Thyroid abscesses classically begin acutely, frequently after upper respiratory tract, pharynx, or middle-ear infections.[21] Associated signs and symptoms include tenderness, dyspnea, pain (which may radiate laterally and up to the ear), hoarseness, dysphagia, fever, and chills.[22] Thyroid abscess has also presented as a pulsatile mass,[23] and there have recently been two reports of vocal cord paralysis as well.[24, 25] Although most patients are symptomatic, asymptomatic cases also have been reported.[16]
Abnormal laboratory findings indicative of thyroid abscess, such as leukocytosis, increased erythrocyte sedimentation rate, and thyroid scans showing hypofunctional areas with decreased uptake, may also be present.[26] Radiologically, plain x-rays may show esophageal[27] or tracheal[28] displacement, and sonography and CT is very helpful in identifying the underlying structure for possible abnormal local thyroid anatomy and in determining the extent of the abscess, particularly in patients with recurrent abscesses who have not had such an examination before [4]
Fine-needle aspiration can be performed to confirm the diagnosis of thyroid abscess and to determine both the causative organism and its antibiotic susceptibility. And for our case in which a malignant transformation of the underlying multinodular goiter was suspected, the FNA is an invaluable diagnostic tool.
It has been recommended that that all patients with acute suppurative thyroiditis of unknown origin-especially young patients with recurrent neck abscesses or who develop acute suppurative thyroiditis and/or thyroid abscess for the first time and those with noninfected cystic thyroid masses (especially left-sided masses)-be evaluated for congenital pyriform sinus fistulae, as reparative surgery may be required to prevent recurrence.[4, 29]
The recommended treatment for thyroid abscess is either excision or incision and drainage, combined with culture and appropriate antibiotic therapy, there is a few people who believe treatment with antibiotics alone will suffice and that surgery should be offered only if antibiotics fail.[16] . it has been found that the disease is commonly self-limiting, and lasts from weeks to months[30] but with a reported 22% mortality rate from suppurative thyroiditis in the era before antibiotics [22]. Empiric, broad-spectrum antibiotic therapy covering Gram-positive cocci should be initiated early when a thyroid abscess is suspected because of its acute nature and the serious complications that can occur. The complications include destruction of the thyroid or parathyroid glands, internal jugular vein thrombophlebitis, local or hematologic spread to other organs, sepsis, and either abscess rupture or fistula formation into the esophagus or trachea.[21]

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