

Tuberculosis thyroid with FNAC changes mimicking thyroid tumor

Neema Tiwari¹, Parul Gupta², Nirupma Lal², Osman Musa³

From ¹Department of Pathology, Super Speciality Pediatric Hospital and Post graduate Teaching institute, ²Department of Pathology, ³Department of Surgery, Eras Lucknow Medical College and Hospital, Lucknow, Uttar Pradesh, India.

Correspondence to: Dr. Neema Tiwari, Department of Pathology, Super Speciality Paediatric Hospital & Post Graduate Teaching Institute, Noida, Gautam Budh Nagar - 201310, Uttar Pradesh, India. E-mail: nehaneemat@yahoo.co.in.

Received - 29-May 2019

Initial Review - 19-June 2019

Accepted - 26-June 2019

ABSTRACT

TB in India is extremely common especially in young and adults as compare to other age groups. It is more common in the female population in India where women remain poor and neglected. We present the case of a 35-year-old male who presented with a thyroid lump. On examination, there was a solitary, non-tender, and firm swelling on the left midline neck with no evidence of lymphadenopathy. Ultrasound of thyroid revealed multinodular goiter with the largest nodule (3.5 × 2 cm) in the right lobe of the thyroid. Ultrasound-guided FNAC revealed follicular cells on a background of lymphocytes making a diagnosis of thyroiditis and underwent hemithyroidectomy for the same.

Keywords: *Clinical mimicker, Malignancy, Thyroid, Tuberculosis.*

Tuberculosis (TB) in India is extremely common especially in young and adults as compare to other age groups. It is more common in the female population in India where women remain poor and neglected [1]. TB burden continues to remain huge with more than half cases not getting registered under the Revised National Tuberculosis Program (RNTCP).

Pulmonary Tuberculosis can present as primary progressive, secondary and disseminated. Common extrapulmonary TB sites are the intestine, skin, liver, spleen, and meninges, etc. The thyroid is one of the lesser known organs to be affected by tuberculosis (0.1-0.4%) [2]. The thyroid gland maybe involved in two forms, first, and the more common is miliary spread to the thyroid gland as a part of generalized dissemination. Second is the focal caseous tuberculosis of thyroid presenting as a localized swelling mimicking a tumor, a cold abscess, or a multinodular goiter with rarely an acute abscess [3]. We present the case of a 35-year-old male who presented with a thyroid lump and underwent hemithyroidectomy for the same.

CASE REPORT

A 60-year-old male presented with a solitary nodule over the left midline neck for 2 months with progressive enlargement. The swelling was accompanied with fever off and on, constipation and stomach pain for 3 months. He also suffered from progressively increasing breathlessness for the past 3 years. On examination, there was a solitary, non-tender, and firm swelling on the left midline neck with no evidence of lymphadenopathy.

His T3/T4/TSH levels were within normal limits. Ultrasound of thyroid revealed multinodular goiter with the largest nodule (3.5 × 2 cm) in the right lobe of the thyroid. Ultrasound-guided

Fine needle aspiration cytology (FNAC) revealed follicular cells on a background of lymphocytes making a diagnosis of thyroiditis. Scintigraphy was not performed due to financial constraints. His X-ray chest was within normal limits. Grossly, we received a thyroidectomy specimen with solid areas resembling tumor with partially preserved thyroid gland (Fig. 1).

On microscopy cystically dilated follicles filled with colloid were seen (Fig. 2). Nodule formation at the periphery favoring reactive changes with occasional well-formed granulomas comprising of epithelioid cells, lymphocytes and Langhan's giant cells also seen (Fig. 3 and 4). The lesion showed areas of cholesterol clefts, cystic macrophages, hyalinization and hemorrhage (Fig. 5). A diagnosis of Colloid goiter post FNAC related changes and co-existing tubercular thyroiditis was made. The patient was lost to follow up.

DISCUSSION

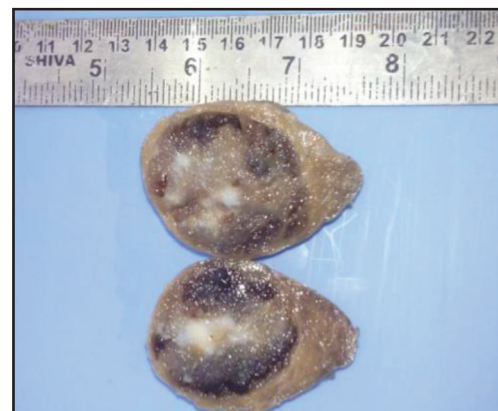


Figure 1: Gross appearance of the thyroid with solid variegated area measuring 3x2 cms with normal looking thyroid circumferentially.

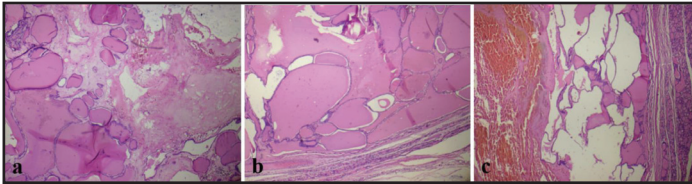


Figure 2: (a) WHAFF changes in thyroid; (b) Dilated follicles with colloid; (c) WHAFF changes with haemorrhage in thyroid.

Tuberculosis thyroid (TTB) is a very rare entity with less than 0.3% cases each year. The exact prevalence of TTB varies from 0.1 to 1% of all cases and ranges from 0.6 to 1.15% of FNAC's results when performed for isolated thyroid nodule in endemic areas (India). The incidence of extrapulmonary tuberculosis is showing a progressive increase with time. Mean age of onset is around third to fourth decades with females being the most affected [4]. The scarcity of this entity may be explained by so many resistive mechanisms of the thyroid gland including the bactericidal property of colloid material, increased vascularity, and the presence of iodine in the thyroid gland and the anti-tuberculous activity of thyroid hormones [5-6].

One of the common modalities in determining the diagnosis of thyroid lesions is fine needle aspiration. It is minimally invasive and cheap with good patient compliance and gives around 80 to 90% diagnostic yield [4]. However, there are diagnostic difficulties in a post FNAC thyroidectomy specimen. Thyroid undergoes secondary changes due to the introduction of the needle. These changes can be schematically divided into two major groups--recent ones (intranodal bleeding and/or necrosis) and subacute/late ones (proliferation of granulation tissue with a predominance of myofibroblasts or endothelial cells, resorptive pseudoxanthomatous granulomas, formation of sarcoid-like granulomas, capsular pseudoinvasion and scarring) [5].

Recently, the incidence of thyroid tuberculosis seems increasing due to the routine practice of FNAC which had an important impact on its diagnosis and management. TTB may be primary when isolated or secondary when associated with a disseminated disease which spreads directly from adjacent organs or by hematogenous route [6-7]. It presents as disseminated or less commonly as focal caseous tuberculosis of thyroid, presenting as a localized swelling mimicking carcinoma [2]. It can also present as a cold abscess appearing superficially, as multinodular goiter [5,6], or very rarely as an acute abscess [4].

Thyroid tuberculosis can also manifest itself as a common thyroid nodule, lump or with a cystic component [7]. The clinical presentation is often subacute, but it may be acute in case of abscess or thyroiditis [5,8]. The patient may also be asymptomatic [7]. The thyroid function is preserved in the vast majority of cases although it can present as hyperthyroidism which occurs generally at the beginning of glandular involvement due to its destruction [3,9]. The hypothyroidism is caused by extensive glandular destruction by caseous necrosis. In the literature, to the best of our knowledge; only three cases of hypothyroidism due to thyroid TB have been reported. The thyroid tuberculosis is

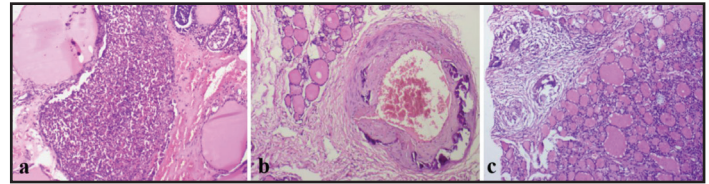


Figure 3: (a) Inflammation admixed with haemorrhage in thyroid; (b) Calcification in vessel wall in thyroid; (c) Tuberculous granuloma with giant cells in thyroid.

usually not investigated because of its rarity. If a mycobacterial infection is suspected, a chest X-ray and a tuberculin skin test (PPD) should be performed [10-12].

The diagnosis is made only after FNAC or after histopathological examination of the surgical specimen when FNAC is negative [13-15]. The diagnosis of TTB remains difficult except when clinical or biological indications (Tuberculosis contagion, personal or family history of tuberculosis, cutaneous fistula on physical examination, long duration of fever, associated inflammatory syndrome or other tuberculous sites such as pulmonary or lymph node tuberculosis) are present. Moreover, TTB may take several clinical aspects of a thyroid involvement, the patient may present with subacute thyroiditis, thyroid abscess or fever of unknown origin, multinodular goiter or only an isolated nodule.

It can also mimic thyroid malignancy as the patient may have dysphagia, dysphonia and laryngeal nerve palsy [8]. An anaplastic carcinoma's presentation is exceptional [9]. An interesting point to note is that general signs may be lacking during the course of the disease. At the onset of the disease, hyperthyroidism may occur as a result of the destruction of the parenchyma and the massive release of thyroid hormones. Subsequently, hypothyroidism may appear by total destruction of the gland. Dysfunction of the thyroid gland in TTB is rarely reported. In most cases, thyroid function is normal [10], only 3 cases of hypothyroidism have been described [6-11], and one patient presented transient thyrotoxicosis preceding hypothyroidism [11].

The imaging techniques (Ultrasonography, thyroid CT or MRI) are not very useful in diagnosis. USG may show a frank abscess with internal echoes or hypoechoic or heterogeneous lesion similar to the neoplastic lesion [12]. Most often, Cervical CT findings show an isolated nodule or heterogeneous multifocal goiter or a hypodense lesion with peripheral enhanced contours after contrast material injection. The presence of cervical lymphadenopathy is possible [13]. Radiological imaging still indicates precisely the thyroid origin of the lesion, specify its solid or liquid nature and its extension to the adjacent structures.

The characteristic histological findings include epithelioid cell granulomas with central caseous necrosis, peripheral lymphocytic infiltration, and Langhan's giant cells [16]. In fact, *caseous necrosis* is a cytologic finding specific to tuberculosis. The simultaneous demonstration of acid-fast bacilli (AFB) makes diagnosis almost certain. In this situation, a mycobacterial culture is helpful [15].

The imaging techniques are not very helpful in establishing the diagnosis and have been described only sporadically due to the disease's rare occurrence [17]. Thyroid tuberculosis should be differentiated from all the main diseases of the thyroid. The

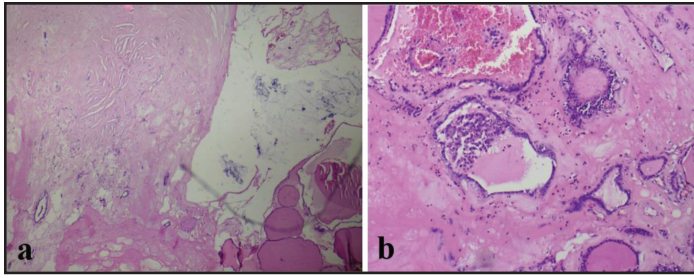


Figure 4: (a) Granuloma as well as multiple nodules being formed in thyroid; (b) Multiple nodules.

differential diagnosis of tuberculous thyroiditis depends on the presence or absence of local pain. If pain is the predominant clinical finding, then the differential diagnosis lies between an infectious form of thyroiditis and subacute granulomatous thyroiditis (De Quervain's, thyroid sarcoidosis, etc.) [18-20].

Many diseases may cause granulomatous inflammation in the thyroid, like granulomatous thyroiditis, palpation thyroiditis, fungal infection, tuberculosis, sarcoidosis, granulomatous vasculitis, and foreign body reaction. However, caseation necrosis is seen only in tuberculous inflammation. In the event where the pain is absent, thyroid tuberculosis might be falsely diagnosed as thyroid malignancy; the two conditions may even coexist [20]. Initially, treatment of thyroid tuberculosis consisted of antituberculous drugs combined with surgical removal of the affected parts of the thyroid gland or surgical drainage [3]. Now, it has been recognized that complete resolution usually follows an appropriate antituberculous drug treatment only [20]. But in cases with large abscess, surgical drainage or resection followed by antituberculous treatment is considered as sufficient, and further surgery is rarely required. FNAC associated changes may complicate the diagnosis of thyroiditis, however, in our case with the changes we saw clear cut granulomas so no diagnostic confusion was created.

CONCLUSION

Thyroid tuberculosis is rare, but an important differential diagnosis of thyroid masses and should be suspected in India which is endemic for TB. Past history of tuberculosis elsewhere in the body or presence of cervical lymphadenopathy and high ESR values may help in the diagnosis, but thyroid tuberculosis can occur even in the absence of these features. FNAC related changes can cause a diagnostic dilemma with associated changes being marked. Prompt diagnosis and treatment is a life saver for the patient.

REFERENCES.

1. BC Kang, SW Lee, SS Shim, HY Choi, SY Baek, *et al.* US and CT findings of tuberculosis of the thyroid Three case reports. *Journal of Clin Imaging.* 2000;24:283-6.
2. Bolat F, Kayaselcuk F, Nursal TZ, Reyhan M, Bal N, Yildirim S, Tuncer I. Histopathological changes in thyroid tissue after fine needle aspiration biopsy. *Pathol Res Pract.* 2007;203:641-5.

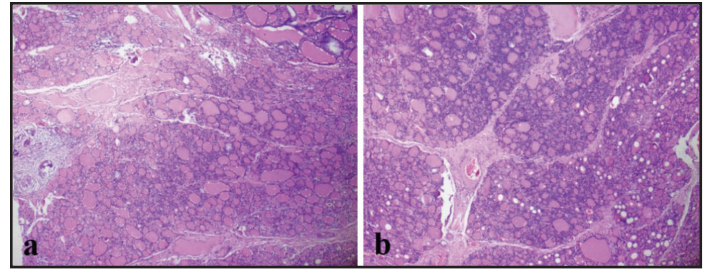


Figure 5: (a) FNAC changes in thyroid

3. Ghosh A, Saha S, Bhattacharya B, Chattopadhyay S. Primary tuberculosis of thyroid gland: a rare case report. *Am J Otolaryngol.* 2007;28:267-70.
4. Surer I, Ozturk H, Cetinkursun S. Unusual Presentation of Tuberculosis Reactivation in Childhood: An Anterior Neck Mass. *J Pediatr Surg.* 2000;35:1263-5.
5. Ryska A, Ludvíková M, Kholová I, Cáp J. Secondary changes in the thyroid gland induced by aspiration cytology. *Cesk Patol.* 2002;38:83-8.
6. Baidya A, Singha A, Bhattacharjee R, Dalalm BS. Tuberculosis of the thyroid gland: two case reports. *Oxford Medical Case Reports.* 2015;4:262-4.
7. Bulbuloglu E, Ciralik H, Okur E, Ozdemir G, Ezberci F, *et al.* Tuberculosis of the thyroid gland: review of the literature. *World J Surg.* 2006;30:149-55.
8. Lourtet-Hascoet J, Le Grusse J, *et al.* Thyroid tuberculosis: a new case and review of the literature. *Ann Endocrinol (Paris).* 2015;76:635-7.
9. Chandanwale SS, Buch AC, Vimal SS, Sachdeva P. Thyroid tuberculosis: presenting symptom of mediastinal tuberculous lymphadenitis—an unusual case. *Tuberculosis of thyroid gland. Indian J Tuberc.* 2014 Jan;61(1):84-7.
10. HO El Malki, M El Absi, R Mohsine, K Ait Taleb, MC Chefchaoui, *et al.* La tuberculose de la thyroïde. Diagnostic et traitement. *Ann Chir.* 2002;127:385-7.
11. Majid U, Islam N. Thyroid tuberculosis: a case series and a review of the literature. *J Thyroid Res.* 2011;359864.
12. Luiz HV, Pereira BD, Silva TN. Thyroid tuberculosis with abnormal thyroid function – case report and review of the literature. *Endocr Pract.* 2013;19:e44-9.
13. Soni RK, Sinha A. Tuberculosis of the Thyroid-a Diagnostic Enigma. *Indian J Surg.* 2015;77:179-81.
14. S Vaid, YY Lee, S Rawat, A Luthra, D Shah, *et al.* Tuberculosis in the head and neck: a forgotten differential diagnosis. *Clinical Radiology.* 2010;65:73-81.
15. Das DK, Pant CS, Chachra KL, Gupta AK. Fine needle aspiration cytology diagnosis of tuberculous thyroiditis: a report of eight cases. *Acta Cytol.* 1992;36:517-22.
16. Khan EM, Haque I, Pandey R. Tuberculosis of the thyroid gland: a clinicopathological profile of four cases and review of the literature. *Aust NZ J Surg.* 1993;63:807-10.
17. Uz-Zaman M, Hussain R, Mirza MK, Khan KA, Khan GM, *et al.* Isolated tuberculousthyroiditis assolitary thyroid nodule. *J Coll Phys Surg Pak.* 2008;18:121-2.
18. A Ouididi, A Cherkaoui, Z. Zaki, H Hachimi, MN El Alami. Tuberculose thyroïdienne. *Ann Otolaryngol Chir Cervicofac.* 2005;122:150-3.
19. R Mssrouri, A Bouzerouata, MK Lahlou, S Benamr, B Chad. Goître multinodulaire : une forme de tuberculose thyroïdienne dont le traitement est médical. *J Chir.* 2007;144-48
20. PC Modayil, A Leslie, & A Jacob. Tuberculous infection of thyroid gland: a case report. *Medical Case Reports.* 2009, Article ID 416231.

Funding: None; Conflict of Interest: None Stated.

How to cite this article: Tiwari N, Gupta P, Lal N, Musa O. Tuberculosis thyroid with FNAC changes mimicking thyroid tumor. *Indian J Case Reports.* 2019;5(4):320-322.

Doi: 10.32677/IJCR.2019.v05.i04.007