CASE PRESENTATION

Tuberculosis of thyroid gland

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ABSTRACT

Tuberculosis (TB) has been reported in many body parts, but the involvement of thyroid by TB whether primary or secondary is extremely uncommon. The TB Bacillus reaches the thyroid gland through blood and lymphatics or directly by cervical lymphadenitis. The diagnosis can be made by Ziehl–Neelsen (ZN) staining for acid-fast bacilli (AFB) and culture of material collected through a fine-needle aspiration (FNA) or histopathological examination.

20 years old female from Baghdad presented with fever mainly at night with swelling left side of neck of 2 month duration found to be Left thyroid lobe enlargement with cystic lesion, lobectomy was done, AFB study was positive for TB bacilli from material collected from the cyst and histopathological study of thyroid lobe showed section with multiple caseating granulomas with multiple giant cell with no malignant cell subsequently diagnosed as a rare case of thyroid TB. Antitubercular medication was prescribed for her for a complete course of 6 months duration with a full improvement in the general condition of the patient.

Tuberculosis is still a possible cause of Thyroid enlargement and the patient should be treated with full course of anti TB medication even after surgery.

Key words: Tuberculosis, Acid-fast bacilli, Thyroid.

INTRODUCTION

Tuberculosis (TB) is a communicable disease that is a major cause of ill health,[1] it is an old disease – studies of human skeletons show that it has affected humans for thousands of years.[2]

Its cause remained unknown until 24 March 1882, when Dr Robert Koch announced his discovery of the bacillus responsible,[3] Mycobacterium tuberculosis, which is spread when people who are sick with TB expel bacteria into the air; for example, by coughing.

It is one of the top 10 causes of death worldwide and the leading cause of death from a single infectious agent (ranking above HIV/AIDS). Globally, an estimated 10.0 million (range, 8.9–11.0 million), people fell ill with TB in 2019, a number that has been declining very slowly in recent years. Globally, 7.1 million people with TB were reported to have been newly diagnosed and notified in 2019, up from 7.0 million in 2018 and a large increase from 6.4 million in 2017 and 5.7–5.8 million annually in the period 2009–2012. About a quarter of the world's population is infected with mycobacterium tuberculosis .The disease typically affects the lungs (pulmonary TB) but can also affect other sites (extrapulmonary TB).[1]

TB has been reported to occur in many parts of the human body but thyroid gland involvement is extremely rare and its true incidence is unknown.[4,5] Thyroid tuberculosis is rare even in countries in which tuberculosis constitutes an endemic disorder, barely 200 cases have been reported in the world literature, and its reported incidence is 0.1%–0.4% in histologically diagnosed specimens.[5]

Tuberculosis of the thyroid can present as inflammation, infection or tumour formation of the thyroid gland. Bacteriological studies are needed to make a specific diagnosis.[6] The most frequent clinical presentation is a solitary thyroid nodule that may present with a cystic component.[7] Sometimes the patients present with

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thyrotoxicosis, hypothyroidism, thyroid abscess, thyroid enlargement mimicking cancer, or show signs of subacute granulomatous thyroiditis (De Quervain's) or of chronic non-suppurative thyroiditis.[8-11]

Tuberculosis of the thyroid gland may be primary or occur in association with tuberculous infection of other organs. In such cases, the thyroid is affected by the spread of bacilli via haematogenous or lymphatic routes or directly from the larynx or cervical lymphadenitis. Tuberculosis primarily affecting the thyroid gland is much more rare and predictably more difficult to diagnose.[4,12]

The presence of multinuclated giant cell, caseous necrotic granulomas are typical of this disease.[13] If FNA is non-diagnostic, a post thyroidectomy biopsy should be considered; in this case, the presence of multinuclated giant cell, lymphocytic infiltration and typical granulomas will confirm the diagnosis.[13,14]

In most cases definitive diagnosis is made post-operatively by mean of histopathological examination of the surgical specimen.[15]

Treatment of thyroid TB consisted of antitubercular drugs combined with surgical removal of affected lobes of thyroid[16] or surgical drainage.[5]

CASE PRESENTATION

A 20-year-old female from Baghdad presented with fever mainly at night with swelling left side of neck of 2 months duration

The fever became daily and night and the swelling enlarged and became red then started to discharge whitish to pink in colour material, patient started to loss of appetite and developed sweating, she has negative previous medical and surgical history

Patient consult a surgeon who sent her for investigation that include; CBC, ESR, T3, T4, TSH, urea, creatinine; all the result were within normal range

Also send her for PT, PTT, and INR that were within normal range and the virology study for HIV and HBV and HCV were negative. Chest x ray without abnormal finding

Real time ultrasonic study of the neck with Doppler was done and revealed; Right thyroid lobe average size. Normal echogenicity, smooth surface, no focal lesion and no vascularity

Left thyroid lobe enlarged and involved by cystic shadow of about 43 mm X 25 mm of thick wall and fine echo inside

Isthmus normal in size and echogenicity .No enlarged cervical lymph node. Normal great vessel of neck. Trachea is centralized. Normal both parotid and submandibular glands. According to these finding left lobe cyst was the diagnosis.

A decision was done by the surgeon to do a lobectomy for thyroid gland. After the operation a fluid from the cystic lesion was collected and send for cytological and AFB study, and the lobe was send for histopathological study.

The result of left lobe thyroid cystic fluid showed cellular smear with mixed inflammatory cell with foamy histiocyte with no malignant cell could be detected. AFB study was positive for TB bacilli.

The gross examination of thyroid lobe showed irregular outlined gray brown cyst of 3 cm X 1.5 cm X 1 cm dimension and another small nodular cystic lesion of 0.5 cm whitish in colour

Histopathological study of thyroid lobe showed section with multiple caseating granulomas with multiple giant cell with no malignant cell

According to these finding TB of thyroid was the diagnosis and the patient referred to the national TB institute, where diagnosed as a case of extrapulmonary TB (thyroid TB) , and the patient started antituberculos medication.

She received a full 6 month course of medication with a very good response.

DISCUSSION

Tuberculosis (TB) is a communicable disease

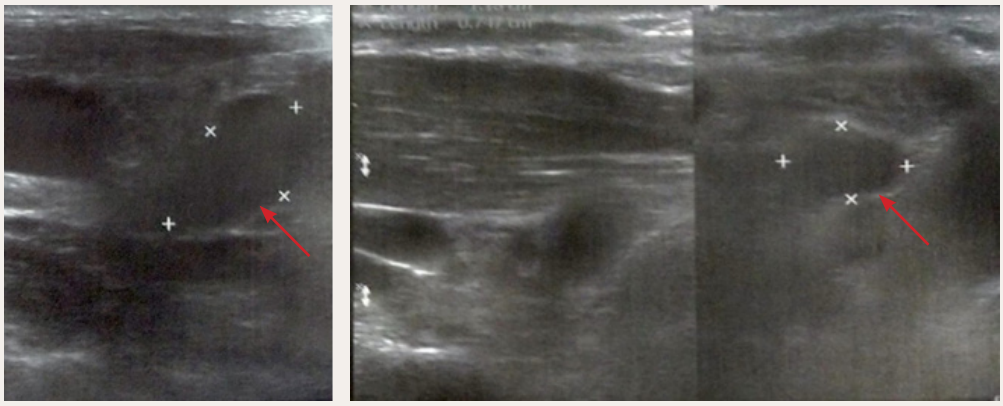

Figure 1 | (A) shows a left lobe cyst measuring 43 x 25 cm with clear content and thin wall (red arrow). (B) same lesion form different angle shows the cystic nature and clear fluid content (read arrow).

that is a major cause of ill health, one of the top 10 causes of death worldwide and the leading cause of death from a single infectious agent (ranking above HIV/AIDS). In 2019, about 10 million people developed TB and 1.4 million died. The disease typically affects the lungs (pulmonaryTB) but can also affect other sites (extrapulmonary TB). TB can affect anyone anywhere, but most people who develop the disease are adults, there are more cases among men than women.[1]

But Thyroid TB is more prevalent in middle-aged women,[17] here we presented 20 young aged female with thyroid gland involved by TB.

Tuberculosis of the thyroid gland whether primary (the most frequent) or secondary, is an extremely rare disease with only isolated reports after the spread of bacilli from an adjacent focus or by seeding the gland during hematogenous dissemination , and a small number of case series have been reported in the literature even in countries endemic for TB.[14,16,18] Regarding our case it is the first case of thyroid TB reported according the data available in national Iraqi TB program

Five different clinical presentations have been described (i) goiter with caseation, (ii) cold abscess formation, (iii) acute abscess, (iv) multiple lesions from miliary tuberculosis spread and (v) chronic fibrosing tuberculosis.[7,18,19] Thyroid swelling or nodule is unlikely to be of tubercular etiology unless the gland has been destroyed or has formed an abscess in a patient of known pulmonary TB.[12]

Our case presented as left sided swelling in the neck proved to be left thyroid lobe cyst with multiple caseating granulomas and our patient did not has pulmonary TB .

It is unknown why thyroid gland is rarely affected, although it is well known the gland resistance to infections. The latter might be related to different mechanisms, such as the bactericidal property of the colloid, the increased vascular supply and oxygenation of the gland, its high iodine concentration,[20,21] increased phagocyte activity in hyperthyroidism, and antituberculous action of the thyroid gland.[22,18]

In the majority of cases, patients are euthyroid just like in our case.[23,24] Hypothyroidism caused by tissue destruction is an extremely rare report.[25]

Imaging techniques are not helpful in establishing the diagnosis. Ultrasonography findings are unspecific showing a diffuse or multinodular goitre but mostly shows a heterogeneous, hypoechogenic mass that may include cystic degeneration , can mimic a carcinoma,[18,26] in our case the finding was left thyroid lobe cyst.

FNA is a useful diagnostic tool as it provides material for bacteriologic and cytological analysis,[27] in our case AFB study was positive for TB bacilli from fluid collected from the cyst after surgical operation , that FNA did not done because the decision was done by the surgeon to do a lobectomy for thyroid gland from the start.

Since granulomatous lesions are not pathognomonic of tuberculosis (as they may be seen in sarcoidosis and subacute thyroiditis), caseating necrosis, if present, confirms the diagnosis of tuberculosis.[28] As in our case

Treatment includes anti-TB drugs combined with surgical removal of the affected parts of the thyroid gland or surgical drainage with a good outcome,[6] as in our patient that started antituberculos medication, and received a full 6 month course of medication with a very good response

CONCLUSION

In spite of being very rare cause of TB, Thyroid TB should be considered as differential diagnosis of thyroid masses. Antitubercular treatment for such patients is recommended with surgery .

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Abbreviations list: Acquired immunodeficiency syndrome (**AIDS**), Complete blood count (**CBC**), Erythrocyte sedimentation rate (**ESR**), Fine needle aspiration (**FNA**), Hepatitis B virus (**HBV**), Hepatitis C virus (**HCV**), Human immunodeficiency virus (**HIV**), International normalizing ration (**INR**), Partial thromboplastin time (**PTT**), Prothrombin time (**PT**), Thyroid-stimulating hormone (**TSH**), Thyroxine (**T4**), Triiodothyronine (**T3**), Tuberculosis (**TB**).

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