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Tuberculosis of the Thyroid Gland: A Case Report

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Abstract

Objectives: To present a case of tuberculosis of the thyroid gland in a 55 year old female who presented with a left lateral neck mass; to discuss the incidence of tuberculosis of the thyroid gland in patients who present with neck masses consistent with a thyroid neoplasm, and to discuss the diagnostic modalities and treatment options for patients with tuberculosis of the thyroid gland.

Design: Case Report on a 55 year old female with a left lateral neck mass.

Setting: Clinical Division of a Tertiary Hospital.

Patient: Patient is a 55 year old female presenting with a left lateral neck mass.

Results: Patient presented with a 1 year history of a gradually enlarging left lateral neck mass accompanied by cough, hoarseness, weight loss and intermittent fever. Tuberculosis work-up was negative and was ruled out. Nasal endoscopy revealed a nasopharyngeal mass. Ultrasound of the neck was consistent with an evolving follicular neoplasm and fine needle aspiration biopsy was inconclusive. Due to risk factors in the patient's profile, total thyroidectomy with bilateral selective neck dissection and nasopharyngeal biopsy were done. Final histopathology results were consistent with a tuberculous process. Patient was then started on anti-Koch's regimen.

Conclusion: Not much has been available in current literature regarding the incidence of tuberculosis in the thyroid gland. According to the few reports that have been made, diagnosis was often made post-operatively or postmortem. Some studies advocate the use of ancillary procedures such as ultrasound and CT scan to aid in the diagnosis. Repeated aspirations with bacteriological studies and staining methods can be recommended to avert a more radical management. A course of anti-Koch's regimen would suffice to treat this disease masquerader.

Introduction

Tuberculosis is an infectious disease caused by the organism, *Mycobacterium tuberculosis* and is transmitted by respiratory droplets from person to person. The lungs are the most commonly affected organ. Extrapulmonary tuberculosis, as the name implies is the infection of the bacteria in organs other than the lungs. Common extrapulmonary sites are the lymph nodes, brain, bones and joints, pleura, and genito-urinary system [1]. They are more common in immunocompromised individuals such as those afflicted with HIV.

This disease is endemic in areas of poor sanitation and crowded living conditions. It is the 6th leading cause of illness and 6th leading cause of death among Filipinos. According to the Department of Health (DOH), as of 2007, 9.27 million cases of tuberculosis has been reported worldwide, 55 percent of themcoming from Asia. The National TB Program (NTP) was put up and was able to achieve 70 percent detection rate for new smear positive and 89 percent cure rate for those afflicted.

In a surveillance report done by Vianzon, et al., from 2003-2011, a total 1,379,390 cases of tuberculosis of all forms were diagnosed and treated. Pulmonary tuberculosis comprised 98.9% of the cases and the remaining 1.1% was extra-pulmonary in nature. This is a rather low percentage compared to the 15% to 20% reported from other countries. This low detection rate in the Philippines may be attributed to the low detection capabilities of primary health care centers or may due to the fact that some cases are diagnosed in institutions not part of the NTP. The report stated that only 7% of public and 4% of private hospitals report to NTP. This problem is currently being addressed by continuing engagement of hospitals with the NTP [2].

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Case Report

Our patient is M.L.T. a 55 year old female, married, Roman Catholic, residing in Bulacan who came in with a chief complaint of lateral neck mass, left.

History started one year prior to admission when patient noticed a mass on her left lateral neck measuring approximately 1.0×1.0×1.0 cm gradually enlarging to 3.0×3.0×3.0 cm which was immobile and non-tender. This was accompanied by occasional productive cough, intermittent low grade fever, weight loss and hoarseness. However, there were no reports of dyspnea, palpitations, heat or cold intolerance, or easy fatigability. Neck examination showed a palpable, non-tender cervical lymphadenopathy on the right at level IV measuring ~1×1 cm and on the left at level III and level V measuring ~2×2 cm and ~4×4 cm, respectively (Figure 1). Nasal endoscopy showed a nasopharyngeal mass and video laryngoscopy revealed right true vocal cord paresis. The possibility of pulmonary tuberculosis or lymphadenitis was entertained however, chest X-ray done showed right middle lobe pneumonia which was treated subsequently. Acid fast staining of sputum specimen was negative. Further work ups included a neck ultrasound done revealed a nodular pattern of both thyroid glands with solid and cystic nodules bilaterally; parenchymal calcification, lower pole, right lobe; multiple cervical adenopathies, bilateral. She then underwent ultrasound-guided biopsy of thyroid nodule which showed paucicellular aspirate containing few clusters of atypical thyroctes with oncocytic features. Cervical lymph node biopsy done was inconclusive. Thyroid function test values were within normal limits and thyroid scintigraphy showed a top-normal-sized thyroid gland with low radioactive iodine uptake. Impression was multinodular non-toxic goiter versus a thyroid neoplasm. Since our patient is considered high risk for malignancy, she subsequently underwent total thyroidectomy with bilateral selective neck dissection.

Resected specimen was sent to pathology for evaluation. Histopathology report of the thyroid gland showed a gross specimen with solid cream white nodules. Lymph nodes and nasopharyngeal mass was cream colored to light brown with regular size and shape. Microscopic section of the thyroid gland revealed a benign thyroid tissue composed of variable sized thyroid follicles replete with colloid and lined by low cuboidal to flattened thyrocytes and was traversed by delicate fibrovascularseptae forming pseudonodules. This was associated with dispersed aggregates of epitheloid histiocytes and Langhan's type multinucleated giant cells surrounded by dense histocytoplasmacytic inflammation (Figure 1). Lymph nodes and nasopharyngeal mass findings disclosed inflammatory lymphoid and nasopharyngeal tissues likewise containing aggregates of caseating granulomas surrounded by multinuclear giant cells (Figures 2 and 3). This was signed out as granulomatous thyroiditis consistent with tuberculousaetiology. Same findings were reported on bilateral left and right levels II and III lymph nodes as well as the nasopharyngeal mass specimen. The patient was discharged and was started on anti-Koch's regimen.

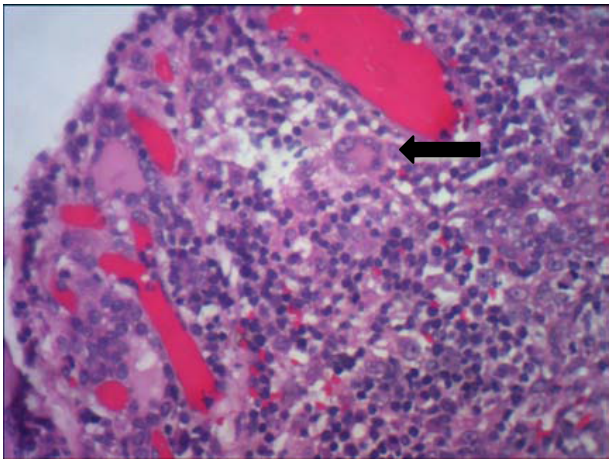

Figure 1: Thyroid specimen. Arrow showing Langhan's type multinucleated giant cells surrounded by lymphocytic reaction to tuberculous process

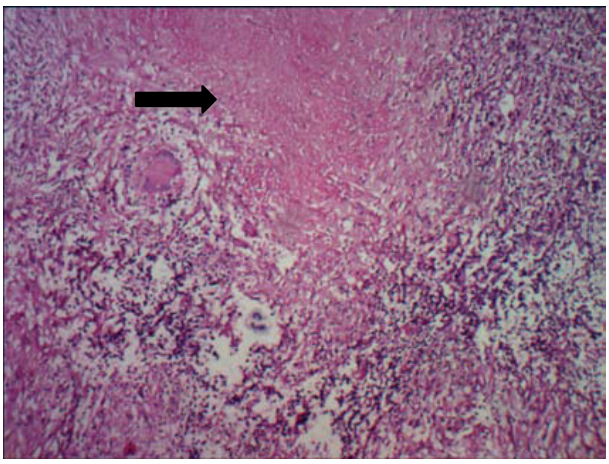

Figure 2: Aggregates of caseating granuloma seen on lymph node specimen

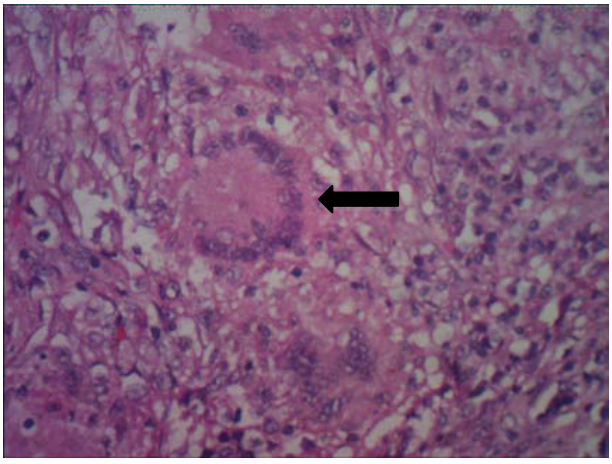

Figure 3: Arrow showing Langhan's type multinucleated giant cells on lymph node specimen.

Discussion

Ozvaran et al. conducted a study which retrospectively evaluated 14,266 TB patients aged 14 to 86 years in 2007 and reported that 2,435 patients were affected by extrapulmonary tuberculosis. They were then evaluated for incidence and

features. Results conclude that EPTB presented most commonly as pleurisy (66%), followed by lymphadenitis (23%) and were more commonly observed among female TB patients (60%) and among male TB patients (59%) respectively. The study also concluded that EPTB showed a significant female predilection (26.8%) compared to male patients (13.1%). Multi-organ involvement was also observed in 37 (1.5%) patients (two organs in 33 and three organs in 4). As many as 197 (8%) EPTB cases had pulmonary tuberculosis simultaneously.

The first case of tuberculosis of the thyroid gland was reported in 1863 in a cadaveric specimen. The first report of a live subject with thyroid gland TB was made in 1893 [3].

Tuberculosis of the thyroid gland is a rare occurrence even in regions where tuberculosis is endemic. This affects about 0.1% of the population with TB and remains to be underdiagnosed due to the rarity of the condition [4]. Presently, no studies or data are available with regards to the prevalence and incidence of thyroid gland TB in the Philippines.

The thyroid gland has been known to be immune to tuberculosis and several theories have been proposed as to why this is so: 1.) bactericidal attribute of the colloid, 2.) extensive vascularity of the gland, and 3.) the high iodine content of the gland. Most documented cases are accompanied by another locus in the body. Signs such as enlarged lymph nodes can masquerade as a reactive process pointing to a thyroid tumor. Other cases report of a thyroid abscess. Barnes and Weather house proposed 2 mechanisms of thyroid gland invasion [5]. One is tuberculous bacteremia to the thyroid from another focus such as the lung or regional lymph node, which may have been the possible route of spread in our patient. But this is still debatable as she tested negative for acid fast bacilli of sputum specimen and chest X-ray. Another possibility for thyroid tuberculosis is the primary involvement of the gland without any other pulmonary or extrapulmonary focus [5-7]. This occurs very rarely. The military spread of tuberculosis to the thyroid rarely gives rise to any manifestations as compared to the primary involvement of the thyroid which can give rise to a variety of signs and symptoms [5].

Tuberculosis of the thyroid gland may present in different ways and must be kept in mind as a differential diagnosis for an enlarged thyroid gland with prominent lymph nodes especially in cases wherein initial pathologic findings remain inconclusive. In a case report by Yin et al., misdiagnosis as thyroid adenoma or carcinoma are attributed to the atypical features of this disease, which is why a reinforcement of such knowledge of the disease is vital [7].

Diagnosis can be made by ultrasound, CT scan and fine needle aspiration biopsy. However, this is still fairly hard to make prior to biopsy of surgery. A series of case reports done by Kang et al. concluded that ultrasound findings showed a heterogenous, hypoechoic, solid mass and a peripherally enhancing mass in contrast enhanced CT scan [2]. Fine needle aspiration, Ziehl-Nielsen staining for AFB and Polymerase chain reaction also are useful diagnostic tools that may be used prior to surgery [4]. Pathognomonic microscopic findings are epitheloid cell granuloma and Langhan's giant cell. Grossly, thyroid gland affected with TB will show necrotic areas with grayish to yellowish material. Post operatively, patient's histopathologic findings were consistent with the pathognomonic findings of tuberculosis [8].

Treatment of tuberculosis of thyroid gland is composed of a 6 month regimen of the conventional anti-Koch's regimen as was mentioned earlier. Surgery is usually not recommended. In a case report by Sanehi et al., a combination of anti-Koch's and repeated aspirations especially in cases of abscess formation is enough to render a patient cured. A well monitored follow up care is essential and must be taken with a multidisciplinary approach involving the surgeon, the endocrinologist and the infectious disease expert.

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