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Tuberculous Lymphadenitis Masquerading as Nodal Metastasis in Follicular Variant of Papillary Thyroid Carcinoma

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ABSTRACT
Papillary thyroid carcinoma (PTC) is the most common form of thyroid cancer and the follicular variant (FV-PTC) is the most prevalent subtype. However, distinguishing between metastatic cervical lymphadenopathy in PTC and tuberculous (TB) lymphadenitis can be challenging, particularly in regions with a high prevalence of TB. This case report describes a 64-year-old woman who was diagnosed with invasive encapsulated FV-PTC and cervical lymph node granulomatous lymphadenitis, which is suggestive of TB. This case highlights the complexity of diagnosis and the importance of a multidisciplinary approach, including anti-TB treatment in high-prevalence regions. Cervical lymphadenopathy in FV-PTC may not always indicate metastasis and TB should be considered, especially in patients with HIV coinfection and developing countries. Comprehensive preoperative evaluation, including imaging and fine-needle aspiration cytology, is crucial for an accurate diagnosis and tailored treatment. This case is the first Southeast Asian instance of FV-PTC, emphasizing the diagnostic challenges in regions with an elevated TB prevalence. FV-PTC's distinct behavior necessitates nuanced management and TB should be considered in cases of cervical lymphadenopathy.

INTRODUCTION

Papillary thyroid carcinoma (PTC) is the most common malignancy of the endocrine system, accounting for approximately 80% of all thyroid cancers[1]. Within the spectrum of PTC the conventional or classical variant is the most frequent subtype, followed by the follicular variant of papillary thyroid carcinoma (FVPTC)[2,3]. While PTC typically presents with painless thyroid nodules, cervical lymphadenopathy can also be observed in a subset of patients. This raises the diagnostic dilemma of differentiating between metastatic spread from PTC and other causes of cervical lymphadenopathy, particularly tuberculous (TB) lymphadenitis[4]. TB lymphadenitis, a common manifestation of extrapulmonary tuberculosis, can closely resemble cervical lymph node metastasis from PTC[1,4]. The affected lymph nodes often exhibit similar distribution and appearance, making distinguishing between the two conditions based on clinical presentation and imaging studies challenging. This diagnostic challenge is further compounded by the potential coexistence of PTC and TB infection, particularly in regions with a high prevalence of TB[5,6].

Case Report: A 64-year-old female patient presented with a 2-year history of a painless, gradually enlarging swelling in the front of her neck. The swelling started small and gradually increased in size. The patient had no history of pain, fever, or other medical conditions. On physical examination, a 5x5 cm diffuse, butterfly-shaped swelling was observed in the front of the neck, which increased with deglutition. No scars, sinuses, warmth, or tenderness were noted. A smaller 1x1 cm swelling was present in the submental region, with a palpable submental lymph node. Radiology revealed a well-defined hypoechoic solid nodule measuring 12x8 mm in the right lobe of the thyroid and a heteroechoic solid nodule measuring 2.0x1.9 cm with a speck of calcification in the left lobe of the thyroid. Significant internal vascularity was observed in both nodules. An enlarged lymph node with loss of the central fatty hilum measuring 2.2x1.1 cm was seen in the midline of the neck at level 1A. The ACR TIRADS category for thyroid nodules was TR4, indicating a moderately suspicious lesion. The patient underwent a total thyroidectomy with submental lymph node excision. The patient's postoperative period was uneventful. Histopathology revealed an invasive encapsulated follicular variant of papillary carcinoma of the thyroid with capsular invasion but no angioinvasion or perineural invasion. The isthmus was tumour-free. Level I-A cervical lymph node showed granulomatous lymphadenitis suggestive of mycobacterial aetiology. On review, opinions from pulmonology and medical oncology were obtained. The patient was started on anti-tuberculosis treatment (ATT) and is now on regular outpatient follow-up.

DISCUSSIONS

Distinguishing between tuberculous lymphadenitis and lymphatic metastasis poses a challenge, especially in patients with papillary thyroid carcinoma (PTC) presenting with enlarged lymph nodes. The occurrence of lymph node enlargement in the supraclavicular area or the posterior triangle of the neck is a shared characteristic between tuberculous lymphadenitis and metastasis originating from PTC[7]. The presented case report discussed the presence of cervical lymphadenopathy in patients with follicular variant PTC which may not represents the metastatic spread of the disease. This case presents a 64-year-old female patient with a 2-year history of a painless, gradually enlarging swelling in the front of her neck. . A palpable submental lymph node and enlarged neck lymph node were also observed. The ACR TIRADS category indicates a moderately suspicious thyroid lesion. Subsequent total thyroidectomy and lymph node excision revealed invasive encapsulated follicular variant papillary carcinoma of the thyroid and granulomatous lymphadenitis suggestive of a mycobacterial aetiology in the cervical lymph node. This case underscores the diagnostic complexity of distinguishing between thyroid carcinoma and tuberculous lymphadenitis in patients with concurrent thyroid nodule and cervical lymph node enlargement. A multidisciplinary approach involving surgery, pathology, pulmonology and medical oncology highlights the importance of comprehensive management strategies for accurate diagnosis and treatment, as evidenced by the initiation of anti-tuberculosis treatment and regular outpatient follow-up (Fig 1-3). Cervical tuberculous lymphadenitis can manifest as the sole presenting symptom with no apparent pulmonary or systemic manifestations. Cervical lymphadenopathy should be considered in regions with a high prevalence of tuberculosis.

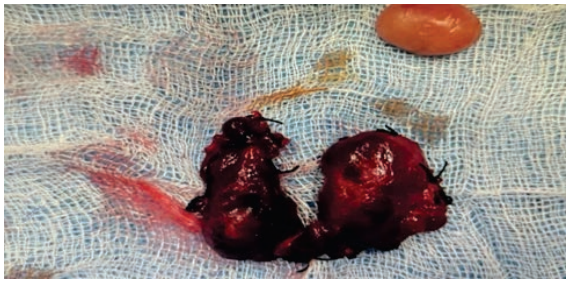

Fig. 1: Excised specimen

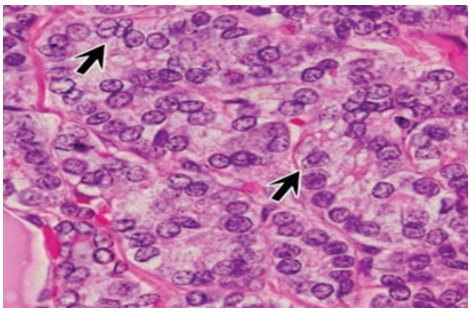

Fig. 2: Histopathology revealing follicular architecture and nuclear features consistent with PTC

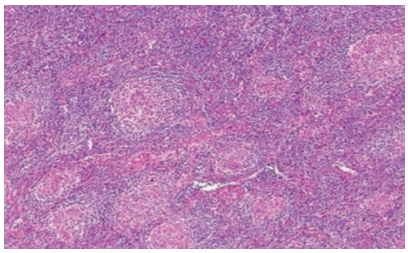

Fig. 3: Histopathology revealing granulomatous lymphadenitis

A chest radiograph supporting pulmonary tuberculosis can aid in the diagnosis. However, cervical tuberculous lymphadenopathy may occur even in the absence of pulmonary tuberculosis. In a similar context, a retrospective chest radiograph in the described case did not reveal tuberculosis-related lesions. Notably, studies have indicated that only a minority of patients with papillary thyroid carcinoma and cervical lymphadenopathy exhibit a history or investigative findings suggestive of tuberculosis[8].

Several preoperative investigations are frequently conducted and their effectiveness varies, particularly in the context of distinguishing tuberculous cervical lymphadenitis from metastatic lymph nodes originating from PTC. In the identification of tuberculosis lymphadenopathy, a study indicated that preoperative fine-needle aspiration cytology (FNAC) exhibits a sensitivity of 88% and specificity of 96%.5 A histopathologic testing remains one of the most accurate diagnostic tests, which was also seen in our study[8]. However, other studies documented a range of sensitivities for FNAC, spanning from 46-90%, with variations attributed to institutional differences[2,9].

Given the elevated prevalence of tuberculosis in Southeast Asia, this marks the first documented instance of its kind in the region. Notably, in contrast to previous reports addressing either conventional papillary thyroid carcinoma (C-PTC) or a combination of conventional and macrofollicular PTC, our case represents the first occurrence of a pure follicular variant of papillary thyroid carcinoma (FV-PTC) the most prevalent subtype of PTC. The significance of our case lies in the distinct clinical behaviour of FV-PTC, characterising an intermediate entity with features between those of C-PTC and follicular thyroid carcinoma (FTC). Comparative to C-PTC, FV-PTC has demonstrated a diminished incidence of lymph node metastasis and an elevated incidence of distant metastasis[10].

The reactivation of tuberculosis is known to occur in the presence of immune suppression, with malignancy being one of the factors contributing to immunosuppression. Additionally, there is a need for additional investigation to ascertain whether tuberculous infection, akin to other chronic infections and inflammatory states, might contribute to the process of carcinogenesis[11].

CONCLUSION

The present case emphasises that cervical lymphadenopathy in patients with follicular variant PTC may not always reflect metastatic spread of the disease. TB should be considered a potential cause of cervical lymphadenopathy, especially in developing countries and patients with HIV coinfection. Proper preoperative evaluation, including thorough medical history, physical examination and appropriate imaging studies, is essential for accurate diagnosis and appropriate treatment strategies.

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