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Primary Thyroid Lymphoma: A Rare Case Revealed by a Goiter

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Abstract **Case Report**

Primary thyroid lymphoma (PTL) is an exceptionally rare malignant tumor originating in the thyroid gland, comprising just 5% of thyroid malignancies and 2% of extranodal lymphomas. Its clinical presentation is unspecific, and diagnosis relies on histological examination. We describe a case of a 70-year-old woman with a swiftly enlarging anterior neck swelling causing dyspnea and dysphagia over six months, alongside weight loss and anorexia. Clinical examination unveiled a painless, constricting goiter with cervical adenopathy. Ultrasonography revealed a multi-heteronodular goiter with a suspicious left loboishmic nodule. CT and 18 FDG PET-CT scans indicated an intensely hypermetabolic cervical tumor infiltrating the thyroid and extending into the thoracic region with lymph node and bone involvement, suggesting high-grade lymphoma. The patient underwent total thyroidectomy and lymph node dissection, followed by favorable outcomes after polychemotherapy. PTL is an uncommon cause of thyroid malignancy and extranodal lymphomas. It should be suspected in patients presenting with a growing neck mass, particularly in those with a history of Hashimoto's thyroiditis. Although certain ultrasound features may suggest PTL, a biopsy remains the definitive diagnostic tool. The most prevalent PTL subtype is diffuse large B-cell lymphoma (DLBCL), constituting over 50% of cases. Treatment and outcomes hinge on both stage and histological subtype. Radiation and chemotherapy are the primary treatments, given PTL's sensitivity to these modalities. Localized, less aggressive lymphomas can be treated with radiation alone, while disseminated or aggressive subtypes may require combined modality treatment (CMT). Surgery is an option when patients experience compressive symptoms or airway obstruction. Prognosis varies depending on factors like stage and histological subtype, underscoring the need for personalized management. In summary, PTL necessitates a multidisciplinary approach for optimal patient care.

Keywords: Primary thyroid lymphoma, large B-cell lymphoma, thyroid ultrasonography, fine needle aspiration, chemotherapy, radiation therapy, surgery.

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INTRODUCTION

Primary thyroid lymphoma (PTL) is an extremely rare malignant tumor of the thyroid gland, it is defined as a lymphoma involving only the thyroid gland or the thyroid gland and regional lymph nodes without contiguity or metastasis of other areas at the time of diagnosis, accounting for 5% of thyroid malignancies and 2% of extranodal lymphomas, with an annual estimated incidence of 2 per 1 million [1-3]. Women are more commonly affected than men. Patients typically present in the sixth or seventh decade of life, with men often presenting at a younger age than women [1, 5, 7]. Most thyroid lymphomas are non-Hodgkin's lymphomas (NHLs) of B-cell origin [4, 5, 9]. Patients with Hashimoto's thyroiditis are at greater risk for developing PTL, with a relative risk of 67 compared to those without thyroiditis [6,100]. Thyroid lymphoma usually manifests as a rapidly growing mass in the neck, causing compression symptoms, and diagnosis relies on histology. Treatment and prognosis of PTL depend upon the histology and stage of the tumor at diagnosis [4, 15].

We report the case of a 70-year-old woman with primary thyroid lymphoma revealed by a compressive goiter. Our main aim is to highlight the diagnostic difficulties of this rare pathology and to show how diagnosis can influence the choice of treatment.

CASE PRESENTATION

Patient B.B., aged 70, with no pathological history, presented with an anterior cervical tumefaction that had been present for 6 months, rapidly increasing in size and becoming compressive, with dyspnea and

dysphagia, in a context of weight loss and anorexia. She reported no signs of dysthyroid. Clinical examination revealed a voluminous compressive goiter that was not painful to palpation, with cervical adenopathy and no other specific clinical signs.

Cervical ultrasonography revealed a multi-heteronodular goitre with a left loboishmic Eutirads 5 nodule and homolateral adenopathies. Thyroid tests were normal and anti-TPO antibodies were negative.

A thyroid cytopunction was performed on the suspected nodule, showing an appearance compatible with a vesicular neoplasm.

A cervico-thoracic CT scan revealed a large, heterogeneous, multinodular, plunging goiter associated with a magma of bilateral laterocervical adenopathies (Figure 1, 2). An 18 FDG PET-CT scan revealed a voluminous, intensely hypermetabolic anterior cervical tumour mass infiltrating the thyroid gland and extending into the intrathoracic region, associated with supra- and subdiaphragmatic lymph node and bone involvement consistent with a diagnosis of high-grade lymphoma (Figure 3).

Due to the compressive nature of the goiter, the patient underwent total thyroidectomy with lymph node dissection. Anatomopathological and histochemical studies were in favor of a thyroid localization of a large-cell lymphoma of B phenotype. The patient was started on polychemotherapy. The evolution was favorable.

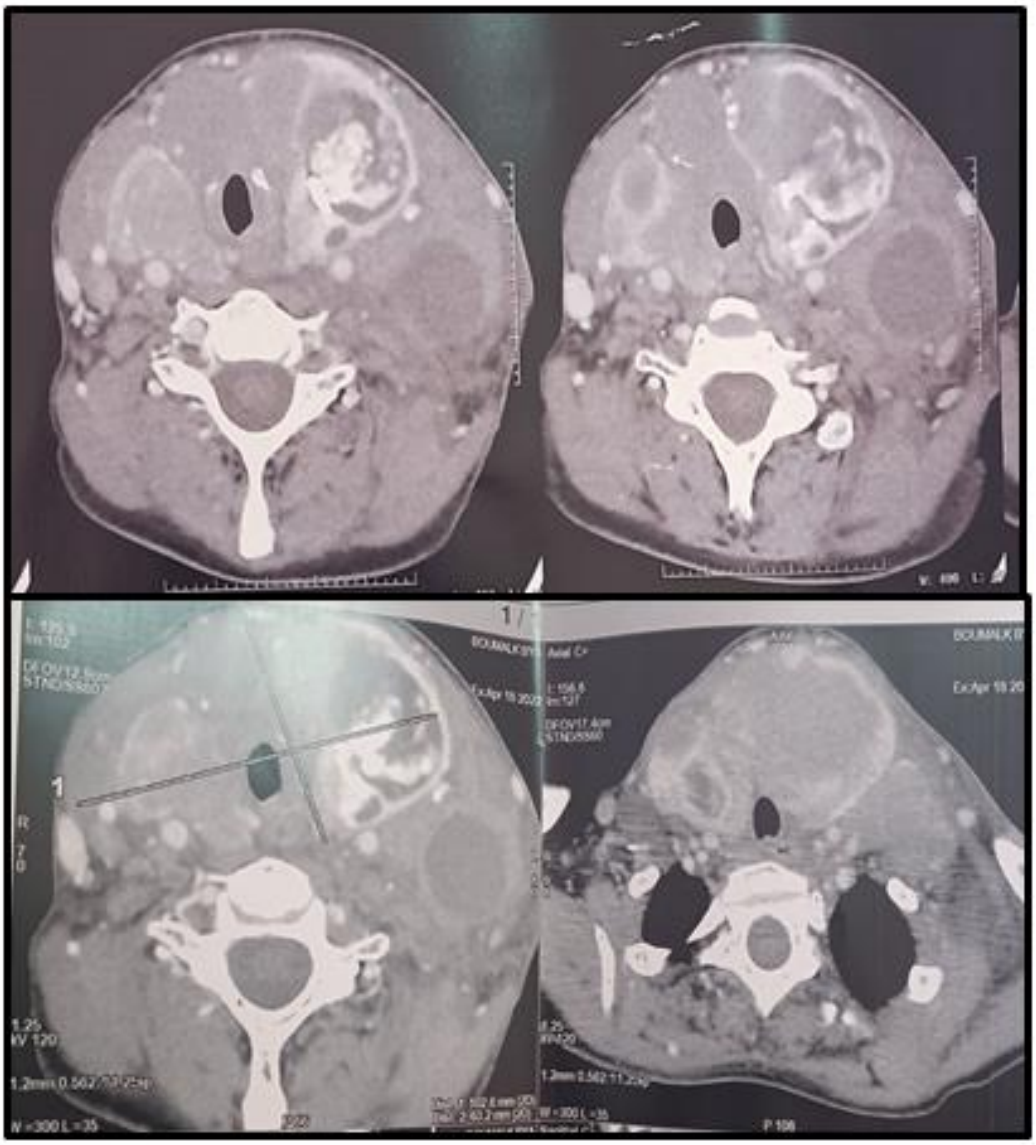

Figure 1: Axial sections of the cervico-thoracic CT scan

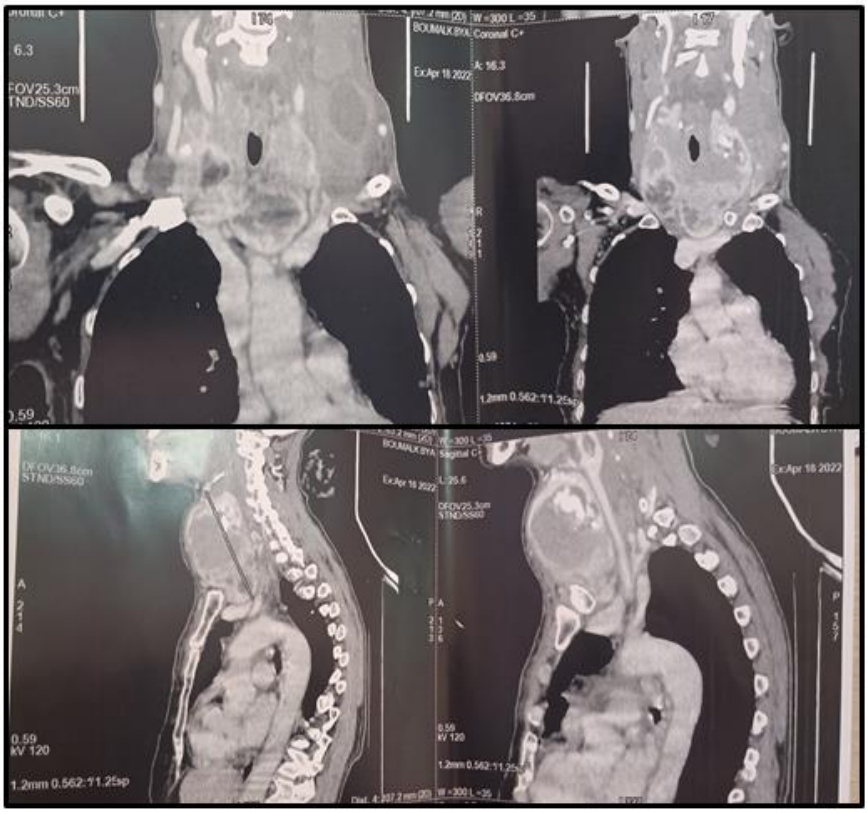

Figure 2: Coronal and sagittal sections of the cervico-thoracic CT scan

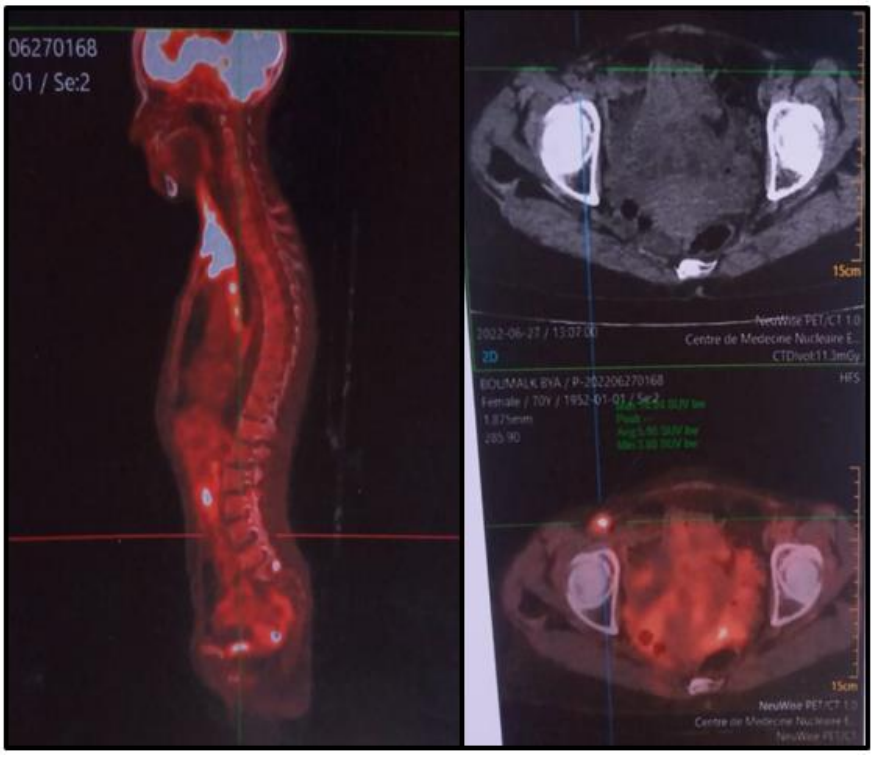

Figure 3: Images from the PET scan of our patient

DISCUSSION

Primary thyroid lymphoma (PTL) is a rare cancer originating from malignant transformation of normal lymphocytes within the thyroid gland. It is predominantly of the non-Hodgkin's B-cell type. The most prevalent PTL subtype is diffuse large B-cell lymphoma (DLBCL), accounting for over half of all cases. Mucosa-associated lymphoid tissue (MALT) lymphoma is the second most common, comprising 10-23% of cases. Less frequent subtypes include follicular

(10%), small lymphocytic (3%), and Hodgkin's lymphoma (2%). Rarely, Burkitt's, T-cell, mantle cell, and lymphoblastic lymphomas make up less than 1% each. Our patient was diagnosed with the most common form, large B-cell lymphoma [1-5].

Patients with Hashimoto's thyroiditis have an elevated risk of developing primary thyroid lymphoma (PTL). Approximately 0.5% of thyroiditis cases progress to PTL, with most PTL cases arising against a background of thyroiditis, found in 60-90% of PTL cases [6, 7, 11]. In our patient, the absence of anti-TPO antibodies aligns with the lack of Hashimoto's thyroiditis.

Thyroid lymphomas commonly manifest as enlarging neck masses, especially in cases of diffuse large B-cell lymphoma (DLBCL). The duration of symptoms varies from days to months, typically shorter in DLBCL cases. Compressive symptoms, like difficulty swallowing or breathing, occur in about a third of patients, with occasional thyroid pain in 12%. B-symptoms, including weight loss, fever, and night sweats, affect up to 10% [5, 12, 16, 17]. Physical examination often reveals a hard, smooth-surfaced neck mass, which can be on one or both sides. Our case aligns with these characteristics, featuring a rapidly enlarging goiter, weight loss, and anorexia.

Ultrasonography plays a vital role in diagnosing primary thyroid lymphoma (PTL). It categorizes PTL into nodular, diffuse, or mixed types based on ultrasound features. Nodular PTL is typically unilateral, displaying hypoechoic, homogeneous, and pseudocystic internal echoes with well-defined borders. In contrast, diffuse PTL is bilateral and hypoechoic, with blurred borders between lymphomatous and non-lymphomatous tissues. Mixed PTL shows multiple patchy, hypoechoic lesions. A prospective study in 165 suspected PTL patients revealed a 47.9% confirmation rate, with higher positive predictive values for nodular and mixed types compared to diffuse. A retrospective review in 13 PTL patients found 15.4% nodular, 76.9% diffuse, and 7.7% mixed patterns [5, 9, 13].

When primary thyroid lymphoma (PTL) is suspected, a biopsy is typically the next diagnostic step. Traditionally, open surgical biopsies were considered necessary for accurate differentiation from other thyroid conditions. However, recent advances in immunophenotypic analysis have enhanced the accuracy of less invasive fine needle aspiration (FNA) biopsies. FNA accuracy can vary, with some earlier studies yielding inconclusive results. Combining FNA with immunophenotyping has improved diagnosis, particularly in distinguishing between different types of thyroid lymphomas like diffuse large B-cell lymphoma (DLBCL) and MALT lymphoma. While core-needle or surgical biopsies are less common, they may be used in specific situations, especially for detecting aggressive lymphoma types. The debate over their necessity continues, considering factors like expertise and tissue amount. In uncertain cases, open biopsy is recommended for a precise diagnosis [5, 9, 14, 18].

Once primary thyroid lymphoma (PTL) is diagnosed, staging is crucial. Staging follows the Ann Arbor system, with most patients at stage IE or IIE, and a minority at IIIE or IVE. Imaging, particularly CT scans, helps establish the disease stage. FDG-PET scans are gaining interest for diagnosis and treatment response monitoring, though their use is limited by cost and specificity. They can be useful for detecting regional and distant disease and assessing treatment response [4, 8, 10].

Historically, primary thyroid lymphoma (PTL) was treated with surgery and radiation therapy (RT). However, due to high relapse and low survival rates, treatment focus has shifted to chemotherapy and radiation, with decisions based on tumor histology and stage. Studies suggest locoregional treatments like RT or combined modality treatment (CMT) with chemotherapy and RT yield better outcomes for localized PTL than chemotherapy or surgery alone [5, 7]. MALT lymphoma patients respond well to RT alone. Surgery's effectiveness in PTL has diminished over the years due to its limitations. Disseminated or aggressive PTL cases benefit from combination therapy involving chemotherapy and RT, with improved outcomes reported for CMT. Prognosis varies by stage and histological subtype, with MALT lymphoma having the best survival rates, while factors like advanced age, DLBCL subtype, lack of radiation or surgery, larger tumor size, mediastinal involvement, rapid growth, and specific symptoms indicate poorer outcomes. A 32-year study reported median overall survival at 9.3 years and 5-year disease-specific survival rates ranging from 64% to 96% across different stages and subtypes [4, 6, 11]. Our patient underwent fine-needle aspiration cytology of the thyroid nodule, which revealed cytological features consistent with a vesicular neoplasm. Subsequent imaging through cervical-thoracic CT scan and 18 FDG PET-CT scan demonstrated extensive lymphoma involvement at stage IVE. Considering the goiter's compressive nature, a total thyroidectomy was performed, followed by the initiation of polychemotherapy, resulting in a favorable response.

CONCLUSION

Primary thyroid lymphoma (PTL) is a rare but significant malignancy with unique diagnostic and therapeutic considerations. The transformation from thyroiditis to PTL underscores the need for vigilance, especially in patients with Hashimoto's thyroiditis. Rapidly enlarging neck masses and compressive symptoms should raise suspicion for PTL. Advances in diagnostic tools like ultrasound and fine needle aspiration have improved accuracy in identifying PTL. Treatment approaches, once centered around surgery and

radiation, now emphasize chemotherapy and radiation for better outcomes. Prognosis varies with factors such as stage and histological subtype, necessitating personalized management. Overall, PTL requires a multidisciplinary approach for optimal care.

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