CASE REPORT

Papillary thyroid carcinoma revealing a synchronous Hodgkin's lymphoma: a case report

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ABSTRACT

Background: Patients having papillary thyroid malignancy along with lymph adenopathy may cause diagnostic dilemmas. It is important to characterize these lymph nodes as metastasic or concomitant lymphoproliferative disease. The development of papillary thyroid carcinoma (PTC) as the second malignancy has been reported frequently after neck irradiation for lymphoma treatment but their coexistence in patients without any history of radiotherapy is very unusual and has been reported only in a few cases.

Case Presentation: We present a 56-year-old female patient having thyroid nodule and cervical lymphadenopathy. The patient did not have significant past medical history, or history of neck irradiation but have intermittent signs of compression, including dysphagia and dysphonia.

A neck ultrasound revealed a 3 cm solid hypoechoic nodule with suspicious features in the right lobe of the thyroid gland along with bilateral jugulodigastric and left supraclavicular lymphadenopathy. Ultrasound-guided fine-needle aspiration biopsy of the right-sided thyroid nodule revealed PTC, while supraclavicular lymph node biopsy surprisingly revealed classical Hodgkin's lymphoma with nodular sclerosis.

Conclusion: Although in patients with cervical lymphadenopathy and concomitant thyroid carcinoma, lymphatic metastasis is the most common diagnosis, but the possibility of synchronous thyroid cancer and lymphoma should not be ignored to optimize the management.

Keywords: Papillary thyroid carcinoma, Hodgkin's lymphoma, case report, synchronous.

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Background

Papillary thyroid carcinoma (PTC) is the most common form of all thyroid cancers, accounting for 90% of all thyroid malignancies. The development of PTC as the second malignancy has been reported frequently after neck irradiation for lymphoma treatment [1] but their coexistence in patients without any history of radiotherapy is very unusual and has been reported only in a few cases [2]. PTC is the most indolent form of the disease and has an excellent prognosis [3]. Although the joint occurrence of PTC and Hodgkin lymphoma (HL) in an individual patient is rare, it alters the course of the treatment. Several studies have reported an association between PTC and lymphomas treated with radiation therapy, mainly HL [4]. However, according to the literature to date, there would be less than 10 cases in which the 2 tumors have coexisted without any history of radiation therapy [5].

Case Presentation

We report a case of a 56-year-old female patient, who presented with neck swellings. On examination, the anterior neck swelling is in the region of the right lobe of the thyroid and moves with deglutination and cervical neck swellings are fixed and hard. She has no history of prior neck irradiation; however, she had complaints of signs of compression, including dysphagia and dysphonia.

A neck ultrasound revealed a 3 cm solid hypoechoic nodule in the right lobe of the thyroid gland with an irregular, speculative contour and some microcalcifications. There were also bilateral jugulodigastric lymph nodes and left supraclavicular lymphadenopathy largest measuring 3 cm. Ultrasound-guided fine-needle aspiration biopsy of the right-sided thyroid nodule revealed cytonuclear atypia suggestive of PTC, while supraclavicular lymph node biopsy surprisingly revealed classic HL with nodular sclerosis (Figure 1A and B).

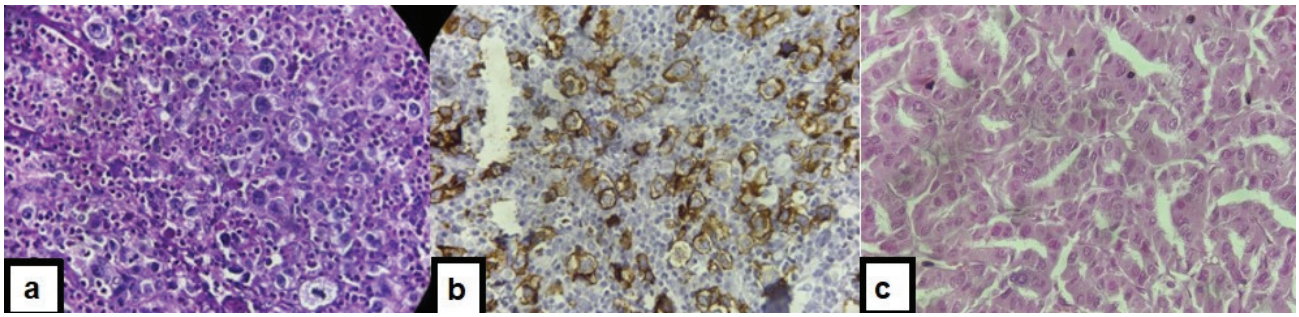

Figure 1. *(a) histological image showing lacunar tumor cells, Hodgkin cells and redsternberg cells. (b) immunohistochemical labeling of tumor cells with anti-CD30 antibody. (c) histological image showing papillae lined by tumor cells with eosinophilic cytoplasm and angular, overlapping, incised nuclei.*

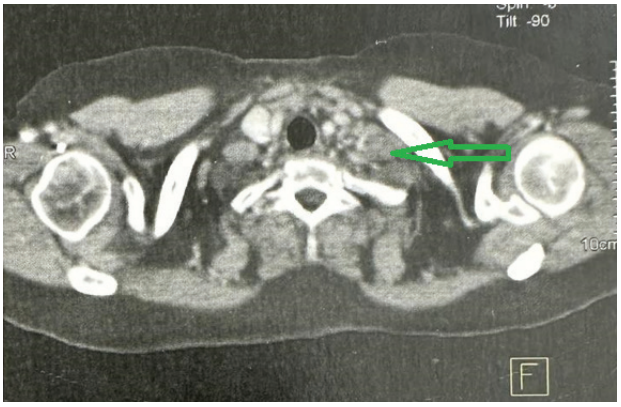

Figure 2. *Axial contrast-enhanced CT scan shows a 3 cm left internal supraclavicular necrotic adenopathy (green arrow).*

A thoraco-abdomino-pelvic computed tomography scan was performed as part of the work-up and showed a 3 cm left internal supraclavicular necrotic adenopathy with no other suspicious adenopathies or extra-lymphatic location, conforming to stage I of Ann Arbor's classification (Figure 2).

Total thyroidectomy with cervical lymphadenectomy were performed. Microscopic examination revealed a variant of papillary follicular thyroid carcinoma without vascular emboli (Figure 1C). Cervical lymphadenectomy revealed PTC metastasis in 7 of 12 dissected lymph nodes. Treatment options based on multidisciplinary consultative meetings have prioritized the disease with the worst prognosis. In this objective, thyroid hormone replacement was prescribed, and the patient was referred to the hematology department where she received six cycles of Rituximab, Cyclophosphamide, Doxorubicin, Vincristine, and Prednisone. After metabolic remission of lymphomatous disease, confirmed by 18F-fluorodesoxyglucose positron emission tomography-computed tomography, the patient received 100 mCi of radioactive 131 iodine (RAI). A whole-body scan (131I-WBS), performed 5 days later, showed two cervical residual uptake foci without suspicious lesions on the rest of the body (Figure 3), with a stimulated serum thyroglobulin (Tg) value of 2.4 ng/ml. The evaluation of therapeutic effectiveness was carried out

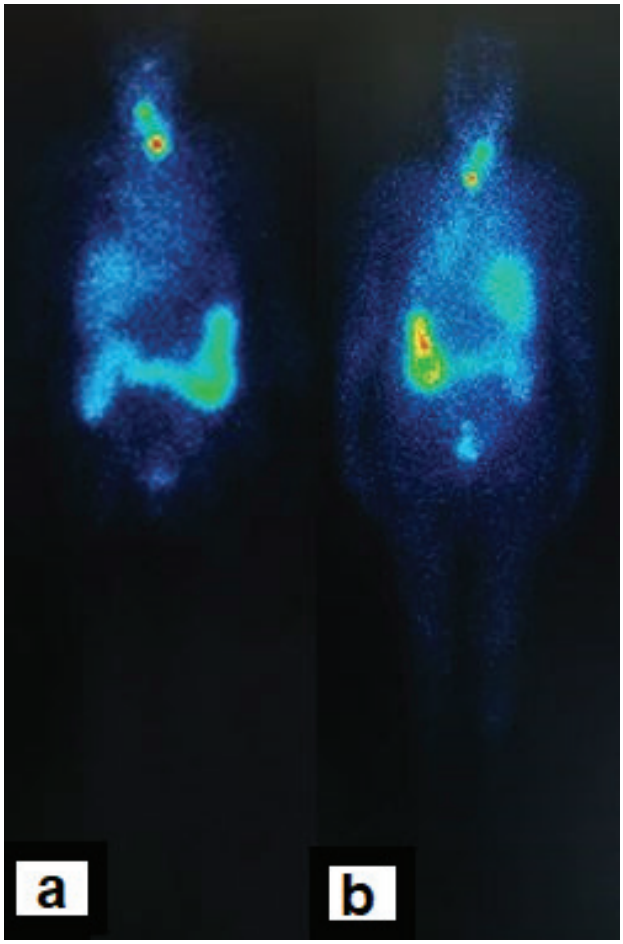

Figure 3. *Whole-body scan (^{131}I-WBS) in anterior (a) and posterior (b) images show two cervical residual uptake foci with no other suspicious lesion on the rest of the body. We also note a physiological distribution of radiotracer in the colon, liver and bladder.*

6 months later, it did not show any abnormal radiotracer uptake on 131I –WBS, and serum Tg was undetectable. The patient underwent regular follow-up at the nuclear medicine department and was declared disease-free a year and a half after completion of treatment (Figure 4).

Discussion

Differentiated thyroid cancer (DTC) is the most common endocrine malignancy [6]. Among DTC, PTC is the most

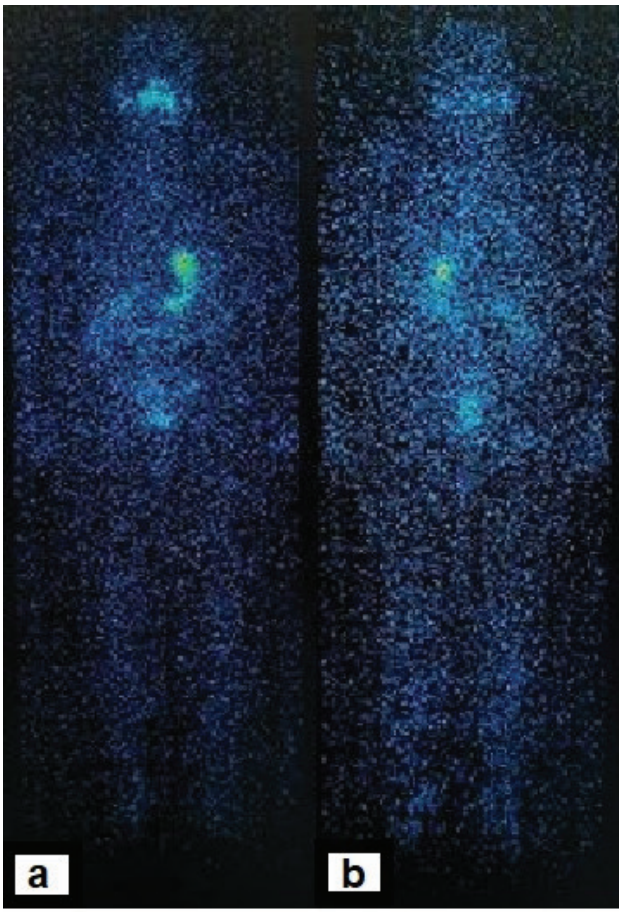

Figure 4. *Whole-body scan (^{131}I-WBS) in anterior (A) and posterior (B) images performed as part of an efficiency assessment shows no cervical uptake foci and no other suspicious lesion on the rest of the body.*

common thyroid cancer, with a 20-year survival rate of over 90% [7].

The main cause of the co-occurrence of thyroid cancer and other head and neck cancers is common environmental risk factors for both primary cancers. Several studies have reported an association between PTC and lymphomas treated with radiation therapy, mainly HL [4]. However, less than 10 cases of synchronous PTC and HL without a history of radiotherapy have been reported in the literature [8]. This highlights the rareness and the relevance of this clinical case.

PTC and HL do not share the same factors. A genetic origin remains possible, but the mutation linking the two cancers has not yet been illustrated [9]. In our patient, no genetic characterization was carried out.

The simultaneous occurrence of lymphoma and DTC is a challenge for both diagnosis and treatment. Due to the small number of reported cases and the lack of data on patient follow-up outcomes, there is no consensus on the treatment of simultaneous PTC and HL. The importance of a lymphoma-first approach was highlighted by Dhanani et al. [3] and Popivanov et al. [10].

If a patient is diagnosed with both PTC and lymphoma, implementing initial treatment of lymphoma is the optimal option, given the fact that PTC is the most idle form of thyroid cancer and cervical lymphadenopathy secondary to lymphoma will disappear or regress after the treatment of lymphoma, which greatly facilitates surgery for PTC and reduces the risk of complications and incomplete surgery [11]. In our patient, surgical resection of the thyroid and lymphadenopathy preceded chemotherapy, whereas RIA was administered after remission of the lymphomatous disease.

The treatment of thyroid cancer is mainly surgery, followed by RAI therapy and lifelong hormone replacement therapy, while HL uses chemotherapy and radiotherapy as the first-line treatment options. With the latest progress, by adhering to a codified treatment plan guided by a multidisciplinary consultative meeting, good disease control is achieved in 90% of HL patients [12].

Conclusion

The synchronous occurrence of PTC and lymphoma is extremely rare, which poses a significant management challenge. Lymphoma first approach should be opted in such cases, followed by total thyroidectomy and RAI therapy for thyroid malignancy to achieve optimal long-term survival. To date, molecular mechanisms of this link and the common risk factors of these two tumors are poorly understood and yet remain to be elucidated to further clarify this association.

List of Abbreviations

DTC	Differentiated thyroid cancer
FNAB	Fine-needle aspiration biopsy
131I-WBS	Iodine 131 whole-body scan
HL	Hodgkin's lymphoma
PTC	Papillary thyroid carcinoma
RAI	Radioactive 131 iodine
Tg	Thyroglobulin

Conflict of interest

None.

Funding

None.

Consent for publication

We have the consent.

Ethical approval

Yes.

Author details

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