

## Synchronous Hodgkin Lymphoma and Papillary Thyroid Carcinoma: The Importance of Positron Emission Tomography/Computed Tomography (PET/CT)

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Dear Editor,

We report a 50-year-old male with synchronous Hodgkin lymphoma (HL) and papillary thyroid carcinoma (PTC). The patient was diagnosed as having HL of the nodular sclerosis type on excisional biopsy of an enlarged right scalene node in March 2018. After further examinations including bone marrow biopsy and positron emission tomography/computed tomography (PET/CT) with 2-[18F]-fluoro-2-deoxy-D-glucose (18F-FDG), he was classified as having stage IVA HL with bone marrow involvement. The patient's medical history was unremarkable for any chronic disease or previous thyroid disease. He had no history of irradiation to head and neck, nor had any regular medications. Her mother had a diagnosis of breast carcinoma.

He was treated with 4 cycles of doxorubicin, bleomycin, vinblastine, and dacarbazine (ABVD) followed by 2 cycles of AVD. Initial PET/CT revealed no uptake in thyroid gland. Interim PET/CT revealed a complete remission except an increased uptake (SUVmax: 8,5) in right thyroid nodule (1,3 x 1 cm). At this time, thyroid function tests were in normal ranges and thyroid auto-antibodies including anti-thyroid peroxidase and anti-thyroglobulin were negative. A thyroid ultrasonography (USG) revealed 2-3 isoechoic heterogen nodules surrounded by hypoechoic halo with a maximum diameter of 0,9 cm. Post-chemotherapy PET/CT detected the aforementioned nodule (1,3 x 1 cm) with a SUVmax of 9,6. However, a repeated thyroid

USG showed a conglomerated isoechoic nodular appearance with lobulated contours having milimetric and microcalcifications with a size of 13x11,5x25 mm in the right upper zone. Fine needle aspiration biopsy (FNAB) was consistent with a suspected diagnosis of PTC. The patient underwent total thyroidectomy, and histopathologic examination demonstrated a 0.6 cm PTC classical variant in the left lobe, and a 1.5 cm PTC follicular variant in the right lobe. One out of two resected lymph nodes were positive. Vessel and nerve involvement was not detected. The patient started to receive thyroid hormone replacement (100 mcg L-thyroxin, daily) and radioactive iodine therapy was planned.

In a previous study [1], 6 out of 1,677 HL patients (relative risk: 15.6) who underwent irradiation developed thyroid malignancy after a latent period of 9-19 years (median 13 years). Abboud et al. have reported a 24-year-old woman who was diagnosed with PTC after 10 years of disease-free HL. This patient had undergone 6 cycles of ABVD for stage IA HL without external radiotherapy [2].

The incidence of thyroid incidentaloma detected by whole body 18F-FDG-PET/CT is quite variable (0.2-8.9%) with a pooled incidence of 2.46%. Diffuse (e.g. Grave's disease, thyroiditis) and most focal FDG uptakes (e.g. thyroid nodules) are commonly associated with benign disorders, but approximately more than one third of these lesions are pathologically proven to be

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malignant. PTC is the most common histologic type accounting for approximately 84% of malignant thyroid incidentalomas. Role of standardized uptake value (SUV) value in differentiating malign from benign lesions is indefinite. Some researchers have found statistically significant difference between SUV value of benign (range: 3.0-6.7,  $p < 0.05$ ) and malign thyroid incidentalomas (range: 4.53-14.2,  $p < 0.05$ ). Moreover, it has been shown that utilization of pre-operative PET/CT in thyroid nodules with indeterminate, repeatedly insufficient, or non-diagnostic FNAB results revealed efficacious sensitivity (75-100%) and negative predictive value (77-100%) rates [3]. In the present case, interim and post-therapy SUVmax values were considerably high (8.5 and 9.6, respectively) which were suggestive of a thyroid malignancy.

Although no SUVmax cutoff value can be considered safe to discriminate malign from benign thyroid incidentalomas, about one third of focal uptakes are malignant. Therefore, suspected thyroid gland lesions with high SUV values

detected by FDG-PET scanning should be further evaluated in terms of primary thyroid carcinoma. Initial work-up may include thyroid function tests, thyroid auto-antibodies, a detailed thyroid USG, and a possible FNAB.

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