Thyroid cancer diagnosed by a routine scan

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ABSTRACT

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CASE REPORT

A 64-year-old male underwent a Tc-99m thyroid scintigraphy, requested by his general practitioner, as part of the evaluation of an enlarged thyroid associated with subclinical hyperthyroidism (suppressed TSH and high normal values of thyroid hormones). Although rare [1, 2], the observation of abnormal bilateral uptake, outside of the thyroid bed, in a patient with thyroid (Figure 1; Panel A), was consistent with uptake by metastatic lymph nodes from a thyroid cancer. An ultrasound guided cytology was positive for papillary thyroid cancer (PTC).

Total thyroidectomy plus bilateral neck dissection were performed. The macroscopic description of the pathological report referred several poorly defined, whitish, nodules (< 1 cm) and the microscopic pathological report was of diffuse follicular variant of papillary thyroid carcinoma (DFVPTC) with extrathyroidal extension, vascular invasion and nodal metastases. This rare histological subtype is more common in young females and has been associated with an aggressive behavior [3].

Following surgery, the patient received two treatments with I-131 (total activity 304 mCi). Post first ¹³¹I treatment (November/2010), whole body scan

(WBS) showed uptake in the thyroid bed and in the lungs (TSH 100 μ IU/ml, Thyroglobulin 42.8 ng/ml, Thyroglobulin antibodies negative) (Figure 1; Panel B). Thoracic computed tomography scan was negative. Post second treatment (April/2011), there was no abnormal uptake (TSH 87.5 μ IU/ml, thyroglobulin 1.8 ng/ml, thyroglobulin antibodies were negative).

At last observation (April/2015), under levothyroxine suppression, the patient had no evidence of disease and both serum thyroglobulin and thyroglobulin antibodies were undetectable.

DISCUSSION

Lymph node metastases from a primary thyroid cancer usually do not take up either iodine or technetium. Therefore, radio isotopic detection of lymph node metastases secondary to thyroid cancer, in the presence of thyroid, is rare [1, 2]

Figure 1: Panel A: Tc-99m thyroid scintigraphy showing diffuse and intense uptake in the thyroid gland and several foci of abnormal extrathyroidal accumulation of radiotracer; Panel B: Whole-body scan (1 anterior, 2 posterior) obtained on the third day after the first I-131 treatment showing intense radiotracer uptake in the thyroid bed and bilateral lungs. Neck spot views (3 anterior, 4 posterior) of the thyroid bed uptake. Corresponding biochemical evaluation (TSH 100 μ IU/ml, thyroglobulin 42.8 ng/ml, thyroglobulin antibodies were negative).

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Received: 05 June 2015

Accepted: 04 August 2015

Published: 01 October 2015

Among the different subtypes of follicular variant of PTC the DFVPTC is also rare, is considered to be more common in young females and has been associated with an aggressive behavior [3]. Contrasting with previous reports, the case presented herein had a favorable outcome. We hypothesized that, despite an aggressive histological pattern, the tumor might have high levels of sodium-iodide symporter (NIS) expression likely to explain the Tc-99m uptake by lymph nodes, regardless the presence of thyroid, as well as the response to radioiodine treatment.

CONCLUSION

Normal thyroid tissue is more efficient at trapping radiotracer, either iodine or technetium, than tumor tissue. Thus, thyroid scan is generally useless to detect lymph node metastases in patients with the thyroid gland in place. However, extrathyroidal areas of uptake on a routine thyroid scan most probably correspond to lymph node metastases from a differentiated thyroid carcinoma.

Keywords: Cancer, Lymph node metastases, Tc-99m thyroid scintigraphy, Tissue, Thyroid

How to cite this article

Bugalho MJ, Cabrera R. Thyroid cancer diagnosed by a routine scan. Int J Case Rep Images 2015;6(10):647–648.

doi:10.5348/ijcri-201529-CL-10084

Author Contributions

Maria João Bugalho – Substantial contributions to conception and design, Acquisition of data, Analysis

and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Rafael Cabrera – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

The authors declare that they have no conflict of interest. Ethical approval: This article does not contain any studies with human participants performed by any of the authors.

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