IMAGING GAMUT

Unusual breast radioiodine uptake in a nonbreastfeeding woman with papillary thyroid carcinoma

Yassir Benameur*, Hasnae Guerrouj, Salah Nabih Oueriagli,Omar Ait Sahel, Imad Ghfir, Nouzha Ben Raïs Aouad

Department of Nuclear Medicine, Farwania Hospital Kuwait

ABSTRACT

Background: A 48-year-old woman underwent total thyroidectomy for a multinodular goiter. Histopathological examination revealed papillary thyroid carcinoma.

The patient was referred to the nuclear medicine department for ablative dose of iodine-131 iodine (3.7 GBq) and post therapy radioiodine scan. Thyroglobulin level was at 11 ng/ml.

Procedure: Planar whole-body radioiodine scintigraphy was performed in the anterior and posterior projections 5 days after the ablative dose of ^{131}I. Single-photon emission computed tomography (SPECT-CT) was additionally performed for anatomical localization of the thoracic radioiodine-avid foci.

Findings: The whole-body radioiodine scan revealed cervical radioiodine uptake, in relation to a post-surgical residue.

The scan also showed two quasi-symmetrical thoracic radioiodine-avid foci located probably outside the pulmonary fields (Figure 1). On the SPECT-CT scan these thoracic foci of radioiodine uptake were seen to correspond to uptake in both breasts (Figure 2).

Conclusion: Whole-body scintigraphy after 131I ablation showed unusual bilateral focal uptake in the breasts in a patient with papillary thyroid carcinoma. This appears to be a rare case of false-positive uptake in a non lactating woman.

Comments: The knowledge of the usual sites of radioiodine concentration in the body is essential for the correct interpretation of the whole-body scintigraphy. However, the real pitfall in the correct diagnosis is concentration of ^{131}I in a lesser known site.

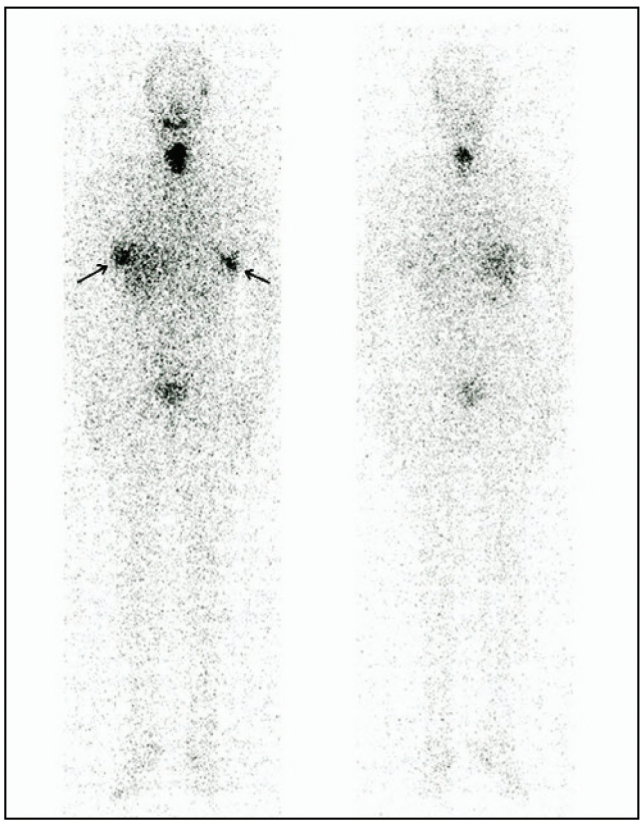

Figure 1. Planar ^{131}I whole-body scan showing two thoracic radioiodine-avid foci probably outside the pulmonary fields

Address for correspondence
Dr Yassir Benameur
Nuclear Medicine Department
IBN-SINA Hospital Center
University Med V-Rabat
Rabat, Morocco
Tel: 0021 2661209162
Email: benameur.yassir@gmail.com

Physiological uptake of radioiodine can be observed in a variety of non-thyroidal tissues, breast is one of them, because of its expression of NIS; iodine accumulation in the lactating breast has been recognized for the last 64 years and is now regarded as a usual finding in postpartum patients [1]. However, concentration of radioiodine in non-lactating breasts is rare with the first such case reported by Sitterson in 1962 [2].

Hammami *et al.* studied the significance of radioiodine uptake by the non-lactating breast [3]. Expressible galactorrhoea and moderately elevated prolactin levels were observed in 48% and 24% of cases, respectively. Other rare causes of breast radioiodine uptake have been described, which include breast fibroadenoma [4] and breast carcinoma [5].

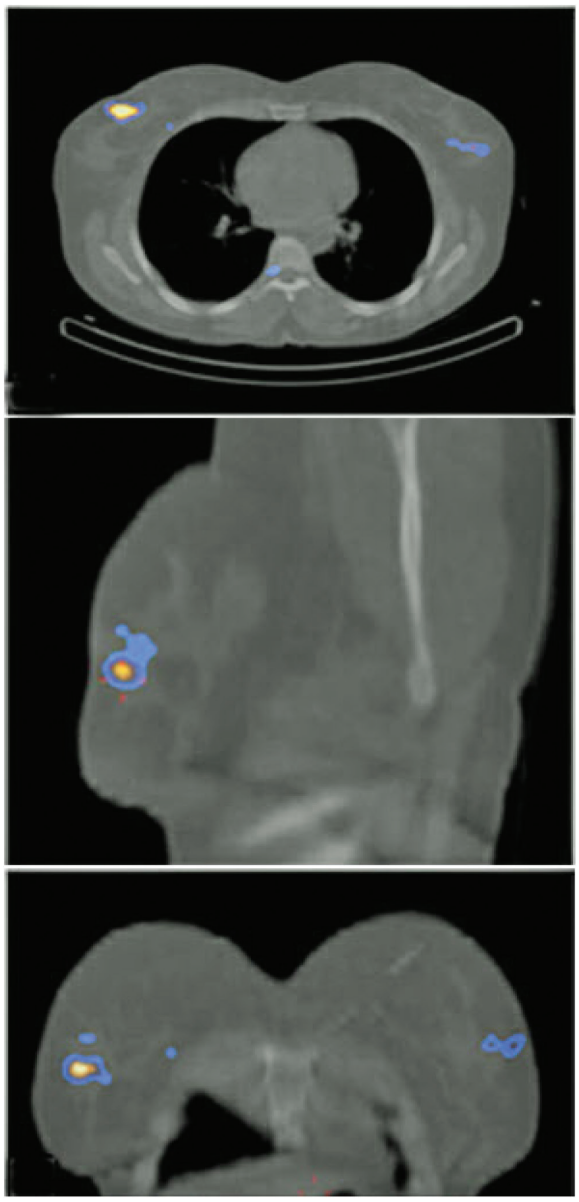

Figure 2. Thoracic SPECT-CT showing radioiodine-avid foci in both breasts: a) transaxial, b) sagittal, c) coronal CT showing glandular breast parenchyma in the area of the radioiodine avid uptake

REFERENCES

1. Honour AJ, Myant NB, Rowlands EN. Secretion of radioiodine in digestive juices and milk in man. Clin Sci 1952; 11: 449– 62.
2. Sitterson BW, Andrews GA. Introduction to thyroid scanning: introduction to thyroid scanning. Progress in medical radioisotope scanning. Oak Ridge 1962; 279–295. <AQ1>
3. Hammami MM, and Bakheet S. Radioiodine breast uptake in nonbreastfeeding women: clinical and scintigraphic characteristics. J Nucl Med 1996; 37:26–31.
4. Berger F, Unterholzner S, Diebold J, Knesewitsch P, Hahn K, Spitzweg C. Mammary radioiodine accumulation due to functional sodium iodide symporter expression in a benign fibroadenoma. Biochem Biophys Res Commun 2006; 349: 1258–63.
5. Wapnir IL, Goris M, Yudd A, Dohan O, Adelman D, Nowels K, et al. The Na+/Isymporter mediates iodide uptake in breast cancer metastases and can be selectively down-regulated in the thyroid. Clin Cancer Res 2004; 10: 4294–302.

Author Queries

<AQ1: Please provide volume number for Ref. 2.>