

Rare case of axillary lymph node metastasis in papillary thyroid carcinoma detected using Iodine-131 whole-body scintigraphy and single-photon emission computed tomography/computed tomography

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ABSTRACT Differentiated thyroid cancer is, usually, associated with an excellent prognosis and indolent course. Distant metastases are rare events at the onset of thyroid cancer. Among these presentations, metastasis to the axillary lymph nodes is even more unusual. Only few cases of papillary carcinoma with axillary nodal metastasis were previously reported in the literature. We present a 38-year-old female who underwent Iodine-131 whole-body scintigraphy, after total thyroidectomy and bilateral neck lymph node dissection for papillary carcinoma of thyroid, showed intense uptake in the remnant thyroid, lung metastasis, left cervical and left axillary lymph nodes. Excision of left axillary lymph nodes confirmed metastatic papillary carcinoma.

Keywords: Axillary nodal metastasis, Iodine-131 single-photon emission tomography/computed tomography, papillary carcinoma, surgical excision

INTRODUCTION

Differentiated thyroid cancer (DTC) is the most common endocrine neoplasm. Distant metastases occur in up to 10% of patients with DTC.^[1,2] They are the main cause of thyroid cancer-related deaths, but are compatible with long-term survival in a large proportion of patients. Regional lymph node metastasis is a very frequent finding in DTC. However, nonregional lymph node metastasis, especially to the axillary nodes has been rarely reported in the literature, and it is not considered to be a typical site for metastasis from DTC.^[3] Our case describes the image findings of Iodine-131 (I-131) uptake in I-131 whole-body scan (WBS) and hybrid single-photon emission tomography/computed tomography (SPECT/CT)

in a case of papillary carcinoma with axillary lymph node metastasis.

CASE REPORT

A 38-year-old female underwent total thyroidectomy with bilateral neck lymph node dissection, which revealed papillary carcinoma with lymph nodal metastasis. After 1-month, her thyroid stimulating hormone was >100 mIU/L, she was referred for I-131 WBS which showed residual thyroid in the anterior neck and lungs along with an intense uptake in the left lower neck and axilla [Figure 1]. SPECT/CT of the chest revealed apical group of left axillary lymph nodes lying just posterior to the upper portion of pectoralis minor [Figure 2]. Excision of the left axillary lymph nodes revealed metastatic papillary carcinoma. She underwent radioiodine ablation therapy with the dose of 200 mCi (7.4 Gbq) for lung metastasis and were on follow-up.

DISCUSSION

Thyroid carcinomas typically follow an indolent course, with excellent long-term survival rates. However, a small subset

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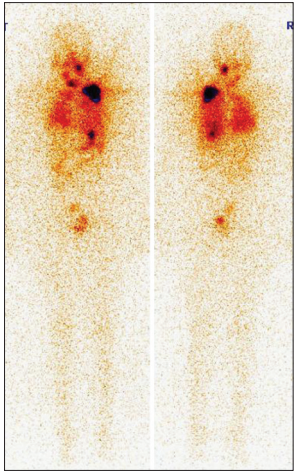


Figure 1: Whole-body Iodine-131 scintigraphy shows uptake in thyroid remnant, lung metastasis, left neck and left axilla

exhibits highly malignant behavior. Larger primary tumor size, extracapsular extension, older age, certain histological variants, and distant metastases have all been identified as risk factors for the poorer prognosis, often with a cumulative effect.^[1] Papillary thyroid carcinoma rarely metastasizes to axillary lymph nodes. In a report by Nakayama *et al.*,^[2] the patient presented with cervical lymphadenopathy, and axillary nodal disease was also part of the initial presentation. The classical concept that the most commonly accepted route of (regional) lymphatic metastasis of papillary carcinoma is through the lymphatic system may be wrong at least in some patients because this approach may not work in unusual lymph node metastasis including axilla, and we should thus also consider the hematologic pathway as the route of metastasis to distant lymph nodes in addition to retrograde dissemination through lymphatic channels.^[2,3]

There is a limited number of case reports describing the exceptional and rare metastatic spread of papillary thyroid carcinomas to the axilla,^[4-7] In those reports, axilla was involved as a late manifestation after multiple metastases to distant organs and lymph node or in recurrent papillary thyroid carcinoma and associated with poor prognosis. In another case, axillary metastasis was incidentally discovered during the diagnostic work-up of a calcification in the axilla detected by mammogram.^[8]

Integrated I-131 SPECT/CT imaging has an additional value in patients with thyroid cancer, for characterization of tracer uptake seen on planar imaging as well as for precise localization of malignant lesions in the neck, chest, and skeleton. This localization of I-131 uptake may have a clinical impact on patient management by influencing referral for I-131 treatment, tailoring of the administered radioiodine dose, and/or the addition of surgery or external radiation therapy when indicated.^[9] There was a report of a case described by Damle *et al.* which detected axillary nodal recurrence in follow-up evaluation using SPECT/CT.^[10] However, to the best of the authors' knowledge,

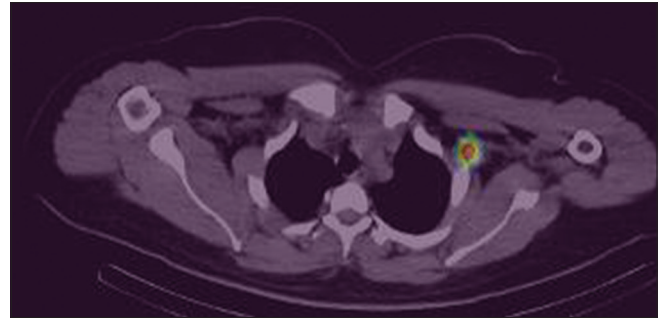


Figure 2: Single-photon emission computed tomography-computed tomography of chest showing increased uptake localized to apical group of left axillary lymph nodes lying just posterior to upper portion of pectoralis minor

no report has yet detailed the axillary metastases from classic type of papillary carcinoma as initial presentation detected using SPECT/CT. There was another report that describes Axillary lymph node metastasis of papillary thyroid carcinoma detected by fluorodeoxyglucose PET/CT in a thyroglobulin-positive patient with negative whole-body ¹³¹I scan.^[11]

Aggressive management of such cases is mandated viz. curative surgery if possible and/or I-131 therapy in cases that are radioiodine avid and have concomitant distant metastasis. It is well known that radioiodine uptake in a node is synonymous with metastatic disease from DTC, notwithstanding other extremely rare differentials. To further confirm our findings we also did an excision biopsy from the node, and she was treated with I-131 therapy for lung metastasis. To the best of our knowledge, this is the first case reported in literature where intense radioiodine uptake was seen in the left axilla as initial presentation and subsequently confirmed by SPECT/CT to be localized to the apical group of axillary nodes.

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