

# Unusual case of hepatic metastasis in follicular thyroid carcinoma detected using I-131 whole body scintigraphy and single-photon emission computerized tomography/computerized tomography

Koramadai Karuppusamy Kamaleshwaran, Sudhakar Natarajan<sup>1</sup>, Vyshak Mohanan, Ajit Sugunan Shinto

Department of Nuclear Medicine, PET/CT and Radionuclide Therapy, <sup>1</sup>Department of Medical Oncology, Kovai Medical Center and Hospital Limited, Coimbatore, Tamil Nadu, India

## ABSTRACT

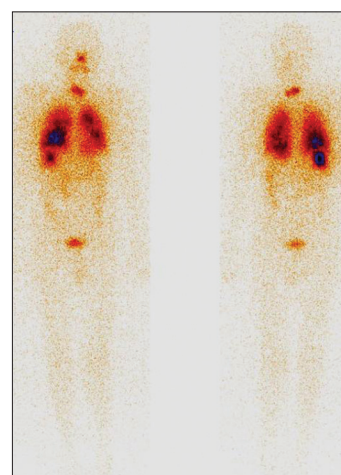
Papillary and follicular thyroid carcinomas, together known as differentiated thyroid carcinomas (DTC), are among the most curable of cancers. Distant metastases are rare events at the onset of DTC. Among these presentations, metastasis to the liver is even more unusual. Only 11 cases of DTC with liver metastasis were previously reported in the literature. We present a 55-year-old male on Iodine-131 whole body scintigraphy showed intense uptake in thyroid bed, metastasis in both lungs and right lobe of the liver. Radioiodine concentration in liver metastases made him amenable to high-dose radioiodine therapy patient.

**Keywords:** Follicular carcinoma, I-131 single-photon emission computerized tomography/computerized tomography, liver metastasis, radioiodine treatment

A 55-year-old man underwent total thyroidectomy which revealed follicular thyroid carcinoma (FTC). After 1-month, his thyroid stimulating hormone (TSH) was >100 mIU/L and serum thyroglobulin was 26,500 ng/ml, he was referred for I-131 whole body scintigraphy (WBS) which showed uptake in neck, bilateral lungs and an intense uptake in the right side of abdomen [Figure 1]. Single-photon emission computerized tomography/computerized tomography (SPECT/CT) of abdomen localizes intense uptake in the upper abdomen to the lesion in the right lobe of liver [Figure 2]. He underwent high dose radioiodine therapy with the dose of 250 mCi (9.25 Gbq).

Differentiated thyroid cancer (DTC) is the most common endocrine neoplasm. Distant metastases occur in up to 10% of

patients with DTC. Larger primary tumor size, extracapsular extension, older age, certain histological variants, and distant metastases have all been identified as risk factors for poorer prognosis, often with a cumulative effect.<sup>[1]</sup> DTC metastases



**Figure 1:** Iodine-131 whole body scintigraphy shows uptake in neck, bilateral lung and in right upper abdomen

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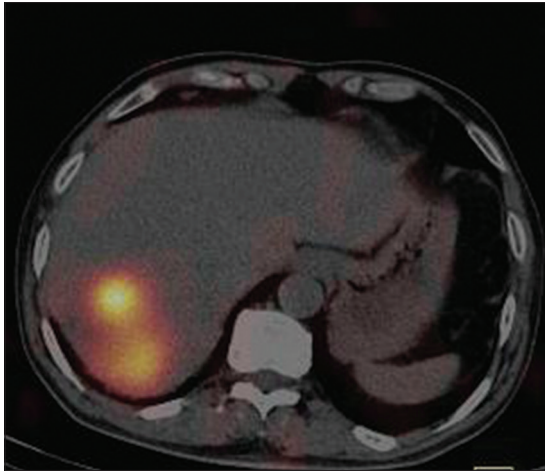


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### Address for correspondence:

Dr. Koramadai Karuppusamy Kamaleshwaran, Department of Nuclear Medicine, PET/CT and Radionuclide Therapy, Comprehensive Cancer Care Center, Kovai Medical Center and Hospital Limited, Coimbatore - 641 014, Tamil Nadu, India. E-mail: dr.kamaleshwar@gmail.com



**Figure 2:** Single-photon emission computerized tomography/computerized tomography of abdomen showing increased uptake in the lesion in right lobe of the liver

to the brain, eye, breast, liver, kidney, muscle, and skin are rare or relatively rare and often overlooked in clinical setting.<sup>[2]</sup> Metastasis to the liver from DTC is a rare event with a reported frequency of 0.5%. Metastatic liver involvement from DTC is nearly always multiple or diffuse and usually found along with other distant metastases (lung, bone and brain).<sup>[3]</sup> A review of the literature revealed that only 10 cases have been documented. Three were males and seven females with an average age of about 63 years (range from 32 to 85 years). Histologically, the primary tumor was identified as papillary in four patients,<sup>[4,5]</sup> follicular in five,<sup>[5-9]</sup> and Hürthle cell TC in one patients.<sup>[3]</sup> In two cases, the metastatic histological type was inconsistent with the primary tumor. The primary tumors were FTC and papillary thyroid carcinoma (PTC), while both their metastatic lesions were a follicular variant of PTC.<sup>[4,5]</sup> Transformation of histopathologic types may occur in liver metastases from DTC, therefore, a careful retrospective histological study is recommended.

Djenic *et al.* recently reported a solitary liver metastasis from follicular variant of PTC, which was surgically resected.<sup>[10]</sup> So our case will be the 12<sup>th</sup> case reported in literature. Most liver metastases from DTC were asymptomatic and were usually discovered incidentally as in our patient. The I-131 WBS combined with SPECT/CT scan plays an important role in increasing diagnostic accuracy, reducing pitfalls, and modifying therapeutic strategies.<sup>[11]</sup> Song *et al.* in their pictorial

review highlights the diagnostic aspects of I 131-SPECT/CT for the localization and definition of rare metastases in DTC patient.<sup>[12]</sup> Our patient received I 131 treatment, because of multiple metastasis in lungs and bone. The survival rate after liver metastases is poor; however, it cannot be attributed to liver metastases alone, because it generally appeared after more metastases at other sites.

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