Radiology Case Reports xxx (2016) 1–4

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://Elsevier.com/locate/radcr

Case Report

Diffuse thyroid metastases and bilateral internal jugular vein tumor thrombus from renal cell cancer

Priyanka Jha MBBS[*], *Mallika Shekhar*, *Jennifer Wan MD*, *Carina Mari-Aparici MD*

Department of Radiology and Biomedical Imaging, University of California, San Francisco, San Francisco VA Medical Center, 4150 Clement St, Bldg 200, Room 2A-166, San Francisco, CA 94121, USA

ARTICLE INFO

Article history:
Received 20 July 2016
Accepted 29 August 2016
Available online xxx

Keywords:
Renal cell cancer
Diffuse thyroid metastases

ABSTRACT

Renal cell cancer rarely metastasizes to the thyroid gland, and it has been reported to present as a solitary mass. We present a case of diffuse thyroid cancer metastases from renal cell cancer. Bilateral internal jugular vein tumor thrombi were also present. To the best of our knowledge, this is the first description of diffuse thyroid metastases from renal cell cancer in the English literature. Renal cell cancer metastases should be considered in the differential of thyroid imaging abnormalities arising in the setting of known renal cell carcinoma, particularly late in the course of disease. This is frequently associated with internal jugular vein thrombi, which should be evaluated with an abnormal thyroid. Thyroglobulin levels are usually normal in such patients.

Introduction

Renal cell carcinoma (RCC) accounts for 2%-3% of all malignant diseases in adults [1] and is responsible for 2.4% of all cancer deaths each year [1]. It is the seventh most common cancer in men and the ninth most common in women [1]. Clear-cell RCC is the most common subtype of RCC, occurring in about 7 of 10 people with RCC [2]. The metastatic pathways for RCC are not always foreseeable, but most common sites of metastases include lungs, brain, bone and/or bone marrow [1]. Metastatic involvement of the thyroid gland from RCC is extremely rare [3–7]. RCC metastases to the thyroid gland have been previously reported as a solitary mass only, without report of diffuse metastatic involvement in the existing literature [3,4,6]. To the best of our knowledge, this is the first description diffuse thyroid cancer metastasis from renal cell cancer, in the English literature.

Case report

An 87-year-old man presented for annual surveillance positron emission tomography computed tomography (fluro deoxy-glucose [FDG]-PET/CT) for evaluation of metastatic renal cell cancer in remission. The patient had left nephrectomy 10 years ago and the last surveillance examination did not demonstrate any evidence of recurrent disease (Fig. 1A). At the FDG-positron

Competing Interests: The authors have declared that no competing interests exist.

* *Corresponding author.*
E-mail address: priyanka.jha@ucsf.edu (P. Jha).

http://dx.doi.org/10.1016/j.radcr.2016.08.016

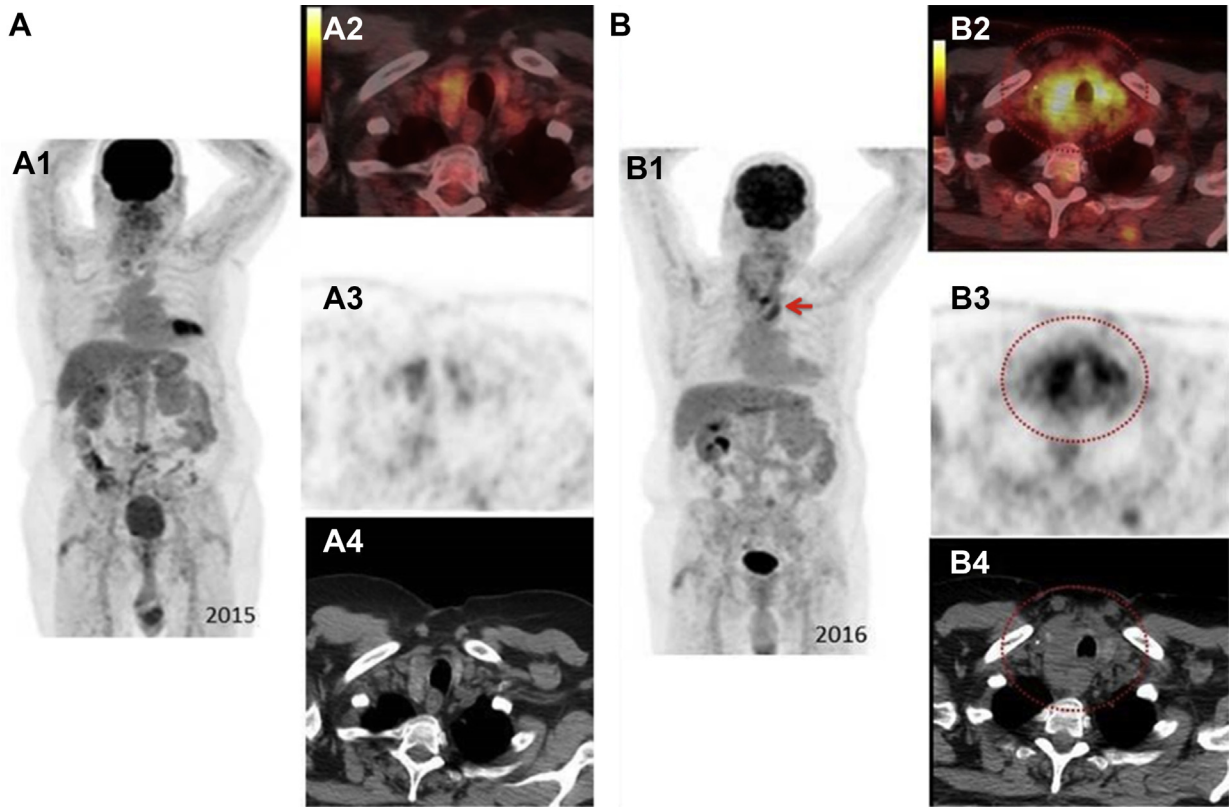

Fig. 1 – Comparative positron emission tomography computed tomography images demonstrating initial findings (A) and that at subsequent (B) annual surveillance. Maximal intensity projection (MIP), fused axial image, attenuation-corrected PET image and computed tomography images are presented. (A) One year ago, the patient had a normal-sized thyroid with expected low-level fluro deoxyglucose uptake. (B) At one-year surveillance follow-up, the patient developed marked thyroid enlargement with avid fluro deoxyglucose uptake. MIP images also demonstrate linear increased uptake in brachiocephalic vein (arrow).

emission tomography computed tomography, new hypermetabolic pulmonary nodules were identified suspicious for new metastatic disease. Interval development of diffusely increased activity in a newly enlarged thyroid gland was concerning for malignancy (Fig. 1). No focal lesions were present. Abnormal activity was noted in bilateral jugular veins and brachiocephalic vein. The patient was referred to ultrasound, where in the thyroid again demonstrated to be diffusely enlarged, markedly heterogeneous and hypervascular, without focal lesions (Fig. 2). At the time of the ultrasound, thrombi were noted in bilateral internal jugular veins. On color Doppler interrogation, internal vascular flow was noted within these thrombi, which demonstrated arterial waveforms on spectral Doppler interrogation (Fig. 3). In addition, thrombus material could be traced in the internal thyroid vein, in contiguity with the tumor thrombus in the jugular veins (Fig. 2). On the basis of clinical scenario, heterogeneous non–mass-like enlargement, the absence of calcifications, bilateral tumor thrombi, and a normal thyroglobulin level and metastatic renal cell cancer was suspected. Subsequently, a nontargeted thyroid fine-needle aspiration was performed, which demonstrated metastatic clear-cell renal cell cancer, with cells containing clear "bubbly" cytoplasm and round and distinct nucleoli (Fig. 4). Immunohistochemical stain demonstrated CD10 and RCC positivity and negative for TTF-1 and SOX-10.

Discussion

Metastatic involvement of the thyroid gland has been rarely reported. In a recently published series, less than 0.2% of all biopsied thyroid nodules result in detection of metastatic disease [5]. On an autopsy series, this number has been reported to be around 1.25%-24%, depending on the widespread nature of disease [8]. Although renal cell cancer very rarely metastasizes to the thyroid gland, it is the most common malignancy leading to thyroid metastases [5,7]. It has been reported to constitute one-third to half of all the causes for thyroid metastases [5,7]. This has most commonly been reported to occur late in the disease, with a mean interval of 7.5 years after initial diagnosis [4]. According to Duggal et al. [4], almost 150 cases of clinically recognized metastatic RCC to the thyroid have been reported in the English language literature. Clear-cell variant of RCC has been reported to most commonly metastasize to the thyroid as well [3–6].