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Superior Vena Cava Thrombus: An Unusual site of Metastatic Disease from Differentiated Thyroid Cancer

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Abstract

The authors submit a case of a rare solitary site of metastatic disease from differentiated thyroid carcinoma presenting as a superior vena cava thrombus discovered with help of PET-CT scan and radioiodine scan. The patient underwent successful resection of the tumor thrombus based on imaging.

Keywords: Unusual Metastases, Differentiated Thyroid Cancer, PET-CT, Superior Vena Cava (SVC) Thrombus.

Introduction

Lymph node metastases remains the most common site of metastases from differentiated thyroid cancer while lungs and bones remain the common sites of distant metastases. Unusual metastatic sites have been described in many organs. Vascular metastases in right atrium has been described in a case report. Our case report describes an unusual site presenting as vascular thrombus in the superior vena cava.

Case Report

48-year-old woman underwent total thyroidectomy for an enlarging neck mass of thyroid origin. The pathology was consistent with papillary thyroid cancer, follicular and classical types with largest focus measuring 6 cm in greatest dimension with positive margins and presence of vascular invasion. The pathological stage was consistent with pT3bNx. She received empiric therapeutic activity of 5.62 GBq (152 mCi) I-131 postoperatively. Post therapy scan demonstrated thyroid bed activity with no evidence of regional or distant metastatic disease. Serum thyroglobulin levels continued to rise 6 months post I-131 therapy. Serum thyroglobulin measured 1388.8 ng/ml with undetectable thyroglobulin antibodies (Tg-ab) <1.0 IU/ml, and suppressed thyroid stimulating hormone (TSH) of 0.2 mcIU/ml. Given elevated thyroglobulin levels, patient underwent evaluation with PET CT scan (Figure 1) that demonstrated abnormal hypermetabolic activity in the right mediastinum localized to the superior vena cava (SVC) and extending into the right atrium (arrows) concerning for metastatic disease. No other sites of distant metastatic disease were noted. Radioiodine scan with SPECT-CT of the chest (Figure 2) demonstrated linear activity correlating to metastases within the SVC supporting thyroid origin (arrows). A dedicated CT heart was performed for further evaluation. Helical axial CT images demonstrated large lobulated mass occupying almost the entire lumen of superior vena cava and extending to the right atrium (Figure 3). She underwent resection of metastatic thyroid tumor from the SVC and right atrium with SVC reconstruction with bovine pericardium. Pathology reported metastatic follicular thyroid carcinoma. The serum thyroglobulin levels continue to decline after her surgery and reported to be 66.2 ng/ml approximately six weeks following surgery. She continues to follow up with endocrine and surgical team.

Discussion

Lungs and bones are the most common sites of distant metastasis from differentiated thyroid carcinoma. The central nervous system is reported as the most common site of unusual metastases from differentiated thyroid carcinoma [1]. Numerous authors have reported additional unusual sites of distant metastases including breast [2], muscle [2,3], kidney [2,3.4,6,8], skin [2,3,5, 8], liver [2,3,6,7,8], penis [3], adrenal [4,8], muscle [5] and pancreas [8]. Portela et al reported unusual solitary site of metastases within vascular system within the

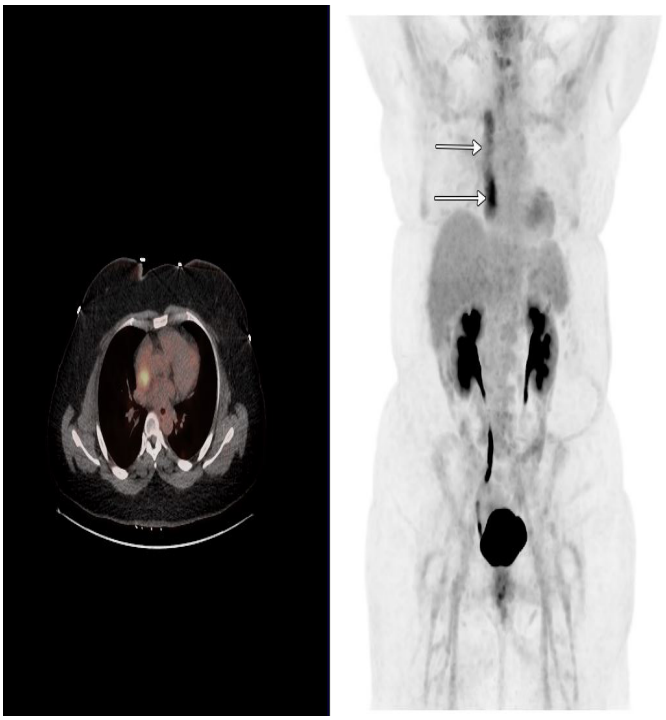

***Figure 1**: PET CT scan.*

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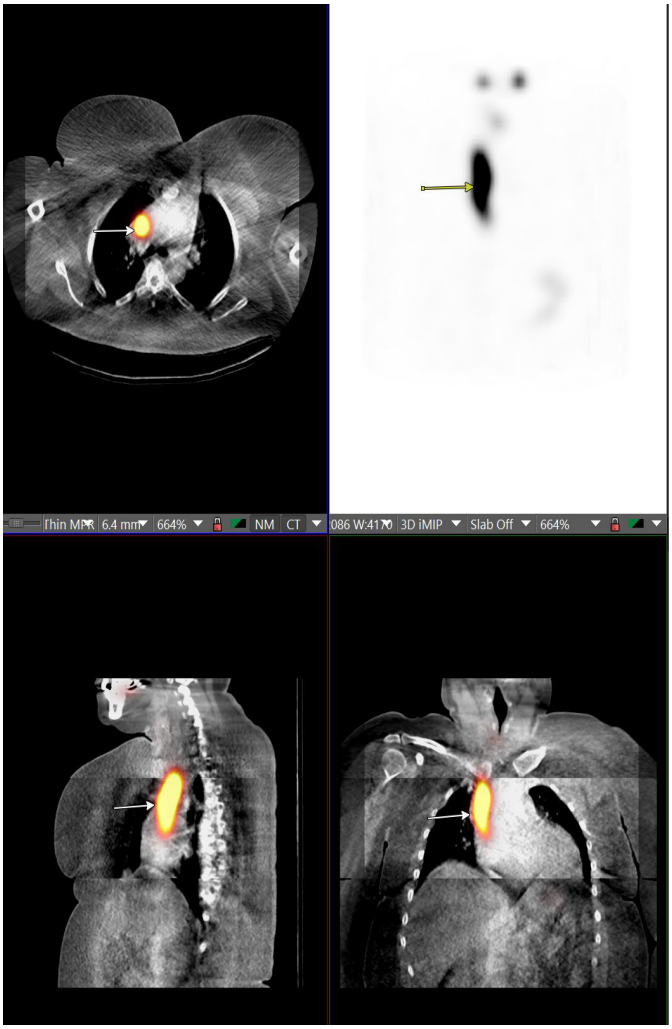

Figure 2: *SPECT-CT thorax.*

Figure 3: *CT Heart.*

right atrium [9]. Tumor thrombi are extremely rare in thyroid cancer and can occur in renal, adrenal, hepatocellular malignancies as direct tumor extension [10]. To our knowledge, this is the first report of a rare solitary site of distant metastatic disease from differentiated thyroid carcinoma presenting as an SVC thrombus discovered with help of radioiodine scan and PET-CT scan. The patient underwent successful resection of the tumor thrombus based on imaging.

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Disclosures

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