Case Report

Renal metastasis from papillary carcinoma thyroid detected by whole body iodine scan: A case report and review of the literature

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ABSTRACT Papillary carcinoma is the most common thyroid malignancy. Usual sites of metastasis include lungs and bone, but renal metastasis is very rare. Here we present a case of a follicular variant of papillary carcinoma with renal and lung metastasis at presentation.

Keywords: Papillary carcinoma, radioiodine, renal metastasis

INTRODUCTION

Papillary carcinoma is the most common thyroid malignancy and is usually associated with good outcome. However, some variants of papillary carcinoma behave aggressively and have a poor prognosis. The aggressive histological variants include diffuse sclerosing variant, tall cell, columnar cell, and cobnail variants. Usual sites of metastasis include lungs and bone and rarely to the kidney. Here we present a case of follicular variant (FV) of papillary carcinoma with renal and lung metastasis at presentation.

CASE REPORT

A 37-year-old male presented to us after total thyroidectomy and right modified radical neck dissection with the histopathological diagnosis of FV of papillary carcinoma thyroid. Postoperative serum thyroglobulin was above 1000 ng/ml. A whole body iodine scan showed intense iodine uptake in lungs and right side of abdomen [Figure 1], which on ultrasound abdomen was found to be right renal mass. Computed tomography (CT) scan showed an enhancing lobulated mass lesion 8.5 cm × 8.5 cm × 7.7 cm arising from the lower pole of right kidney [Figure 2]. Ultrasound-guided fine needle aspiration (FNA) cytology from the renal mass showed adenocarcinoma, morphologically compatible with metastasis from thyroid primary [Figure 3a and 3b]. Immunocytochemical staining showed the tumor cells to be positive for thyroglobulin [Figure 3c]. Hence, a cytopathological diagnosis of metastatic papillary carcinoma of the kidney was made. In view of extensive lung metastases, nephrectomy was not planned, and the patient was treated with 100 mCi radio-iodine. Currently, he is asymptomatic; serum thyroglobulin is above 500 ng/ml. We are planning to go for further high dose radioiodine treatment.

DISCUSSION

Thyroid malignancies usually metastasize to bone and lungs, and renal metastasis is relatively uncommon. Thyroid carcinoma accounts for only 2.5–2.7% of all primary tumors that metastasize to the kidney. Renal metastases are found at autopsy than during life.[1,2] Renal metastasis usually occurs along with other sites of metastasis such as lung or bone. Metastasis to the kidney can develop several years after thyroidectomy[3,4] or it can present primarily as a renal mass.[5,6] To the best of our knowledge, only thirty cases of renal metastasis from thyroid carcinoma have been reported. Seven cases of renal metastases from FV of papillary carcinoma are already reported [Table 1]. This is the 8th case

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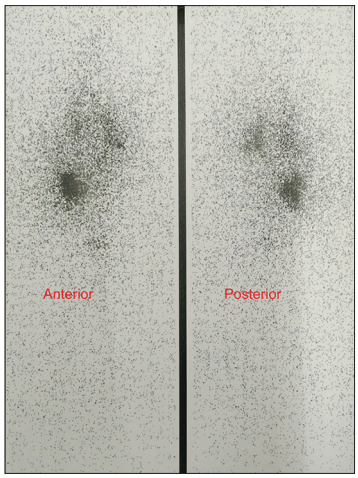

Figure 1: Postoperative whole body iodine scan showing uptake in lungs and right side of abdomen in anterior and posterior views

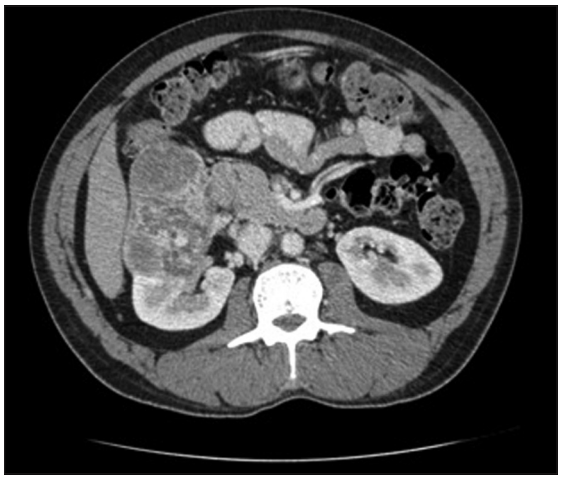

Figure 2: Contrast enhanced computed tomography scan of abdomen showing enhancing lobulated mass arising from right kidney

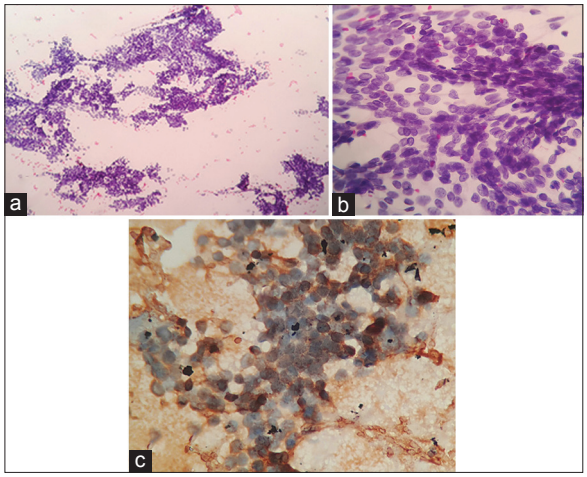

Figure 3: (a) Cellular smear showing sheets and papillaroid clusters of atypical cells (PAP*200). (b) Higher power view shows atypical cells with vesicular nucleus,intranuclear grooves and occasional intranuclear inclusions (PAP *400). (c) Atypical cells showing focal moderate positivity for thyroglobulin (IHC, ×400)

of FV of papillary thyroid carcinoma with asymptomatic renal metastasis at presentation.

Table 1: Renal metastasis from follicular variant of papillary carcinoma-reported cases

Author	Year of publication	Metastatic sites other than kidney	Primary treatment received for renal lesion
Tur *et al*.[7]	1994	Liver	Nephrectomy
Graham and roe[8]	1995	Nil	Nephrectomy
Gamboa-Dominguez and Tenorio-Villalvazo[9]	1999	Brain	Nephrectomy
Smallridge *et al*.[10]	2001	Lung, bone	Partial nephrectomy
Liou *et al*.[11]	2005	Lung, bone	Radioiodine treatment
Varinot *et al*.[12]	2014	Bone, brain	Nephrectomy
Lubana *et al*.[13]	2015	Bone, lung, liver	Radioiodine treatment

In our patient, the renal lesion was detected in the postoperative whole body iodine scan and was confirmed with CT scan and cytopathology. In case of low volume metastatic disease, surgical excision of the lesion followed by radioiodine treatment gives best results. Surgery was not attempted in our patient because of extensive lung metastases.

Renal metastasis from thyroid cancer is usually a diagnostic challenge because of its rarity. Diagnosis is difficult on cytology specimens. Usually histopathological examination along with immunohistochemical studies with markers such as thyroglobulin, thyroid transcription factor-1, PAX-8 are needed for diagnosis. In our patient, we could diagnose metastasis in cytology from the FNA sample, the origin from thyroid was confirmed by thyroglobulin positivity in the malignant cells by immunocytochemistry. Metastatic lesion may retain adequate sodium-iodide symporter expression so that they can be detected on whole body iodine scan/single-photon emission computed tomography/CT.[10] In such situations, they can be effectively treated with radioiodine as in our case.

CONCLUSION

We report this case because of its rarity and also due to the challenge we faced in cytology and immunocytochemistry in diagnosing this in FNA specimen without subjecting the patient to biopsy. However, any abnormal uptake in abdomen other than the physiological gastrointestinal uptake also requires radiological correlation.

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Conflicts of interest
There are no conflicts of interest.

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