

Thyroid-like Follicular Carcinoma of the Right Kidney: A Case Report

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Abstract

Renal cell carcinoma is responsible for approximately 80% of malignant tumors of the kidney. Clear cell, papillary, and chromophobe forms comprise the most frequent histological subtypes of renal cell carcinoma. Thyroid-like follicular renal cell carcinoma is an extremely rare subtype of renal cell carcinoma that resembles thyroid follicular neoplasms. Histologic findings should not be confused with chronic pyelonephritis with thyroidization or renal metastasis of thyroid cell carcinoma. There are few reports of thyroid-like follicular renal cell carcinoma. Here, we report a new case of thyroid-like follicular carcinoma of the kidney diagnosed in a partial nephrectomy specimen in a 62-year-old man.

Keywords: Kidney tumor, Renal cell carcinoma, Thyroid-like follicular renal cell carcinoma

Introduction

Thyroid-like follicular carcinoma of the kidney is a rare subtype of renal cell carcinoma. Histologically, it resembles a well-differentiated thyroid follicular carcinoma. However, metastatic thyroid carcinoma is differentiated by clinical and paraclinical data, immunohistochemistry analyses, and patient follow-up.^{1,2} Here, we report a case of thyroid-like follicular carcinoma of the kidney with morphologic, immunohistochemical, and molecular characteristics.

Case report

We reported this case of a 62-year-old patient with a previous history of diabetes mellitus and frequent urination, with an incidental finding of a single right solid renal lesion, 3 cm in diameter. The lesion was observed as a hyperechoic mass during a routine examination. Physical examination of the thyroid, abdomen, and pelvis was normal. Laboratory tests including thyroid function tests, were within the normal ranges. A contrast tomography (CT) scan revealed a right, solid renal lesion with low contrast

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enhancement. There were no metastatic lesions, lymph node enlargement, or renal vein involvement observed. The patient underwent a partial nephrectomy. Gross examination showed a 3 cm pale yellow mass that had a hemorrhagic surface (Figure 1).

The specimen was fixed in 10% buffered formalin, embedded in paraffin, and serially sectioned into 4- μ m-thick slices. The specimen was stained with hematoxylin and eosin. Histological analysis indicated that the tumor was surrounded by a delicate capsule and follicular architectures that contained colloid-like material in their lumina. No conventional (clear cell) renal cell carcinoma or any other known subtypes were observed. The follicles were lined by cuboidal to columnar cells with a moderate amount of clear or eosinophilic cytoplasm. The nuclei were round to ovoid with evenly distributed chromatin and inconspicuous nucleoli. There was no mitosis (Figure 2). Immunohistochemical assessment showed that the tumor cells were positive for CK (Figure 3) and CD10 (Figure 4), and negative for CK7 and CK20. Both morphology and immunohistochemical findings indicated a diagnosis of thyroid-like follicular carcinoma of the kidney.

Discussion

Thyroid-like follicular renal cell carcinoma is an uncommon finding, with approximately 30 cases presented in the literature. Unlike renal cell carcinoma, where middle-aged males are more prevalent, females comprise the majority of cases. The majority of reported cases are incidental findings, most often in the right kidney. Diagnosis by imaging studies is difficult for differentiation from renal cell carcinoma since thyroid-like carcinoma does not have a specific characteristic. Hence, a renal biopsy can assist with diagnosis.²

Gross examination of all tumors were limited to a fibrous capsule, with or without areas of hemorrhage or necrosis.³

Microscopic assessment of tissues show follicles covered by cells with eosinophilic cytoplasm and colloid-like material.²

They usually present with Fuhrman II or III

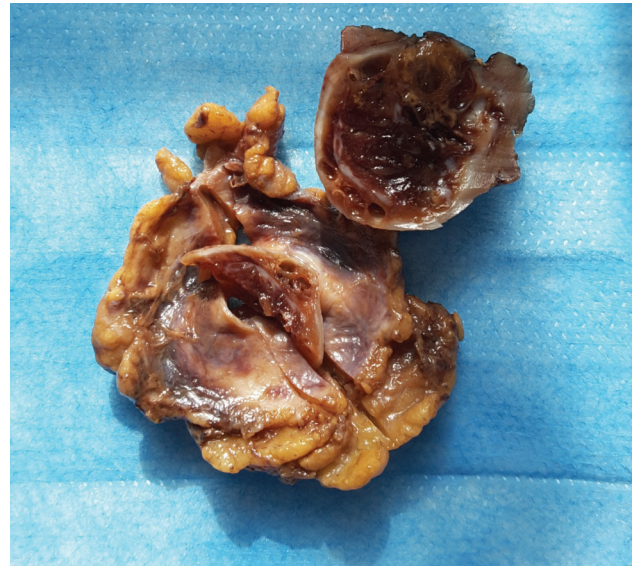


Figure 1. Macroscopic view of the tumor.

nuclear grade. Immunohistochemistry results indicate positive CD10, vimentin, CK7, AE1/AE3, PAX-2, and CAM 5.2. TTF-1 and TG are also negative.⁴ Mitosis is absent or rare. Immunohistochemical staining is variable.⁵

Microscopic features of this disease show similarities to chronic pyelonephritis with thyroidization or thyroid cell carcinoma that has metastasized to the kidneys.^{2,6}

Despite similar appearance between thyroid cell carcinoma and thyroid-like follicular renal cell carcinoma in microscopic assessment, the colloid

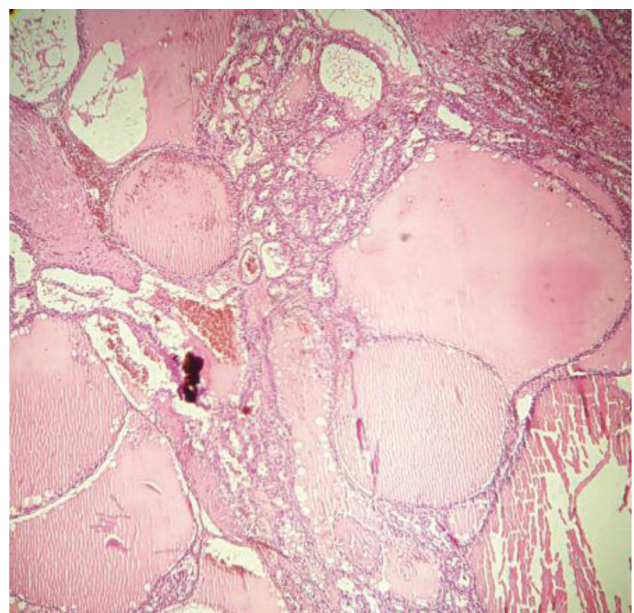


Figure 2. Microscopic view of the tumor (hematoxylin and eosin, 10 \times).

like material seen in thyroid-like follicular renal cell carcinoma is composed of Tamm-Horsfall glycoprotein, the most abundant protein found in urine. Struma ovarii, an ovarian teratoma composed mainly of thyroid tissue, might be considered as the differential diagnosis in women.⁷ Metastasis from a primary thyroid tumor kidney is extremely rare; thus far, only 16 cases have been reported in the literature. The differential diagnosis is easily given by positive TTF-1 and thyroglobulin markers. There are few reports of metastatic thyroid-like follicular renal cell carcinoma. Of those reported, most presented with lung metastases.^{2,8}

This cancer appears to have a good prognosis and outcome. The main treatment is nephrectomy.

Conclusion

We reported a rare renal tumor with histologic features similar to follicular carcinoma of the thyroid. However, clinic and paraclinical findings, along with immunohistochemical studies enabled us to diagnose this as a case of thyroid-like follicular carcinoma of the kidney. Thyroid-like follicular carcinoma of the kidney has unique morphological and immunohistochemical charac-

teristics. Based on the few reported cases, the histology and clinical manifestations are the same as other renal tumors. Imaging studies often do not provide enough information to differentiate between benign and malignant lesions. Confirmation depends on pathological examination with immunohistochemistry analysis. Surgical treatment is still the preferred therapeutic method. This disease seems to have a good prognosis; however, there are few cases with a brief follow-up.

Conflict of Interest

None declared

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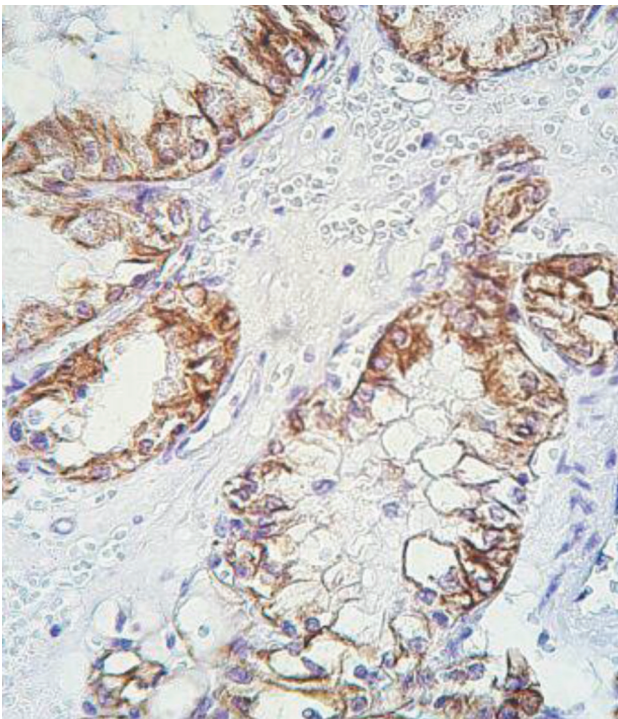


Figure 3. Immunohistochemical staining for CK (40×).

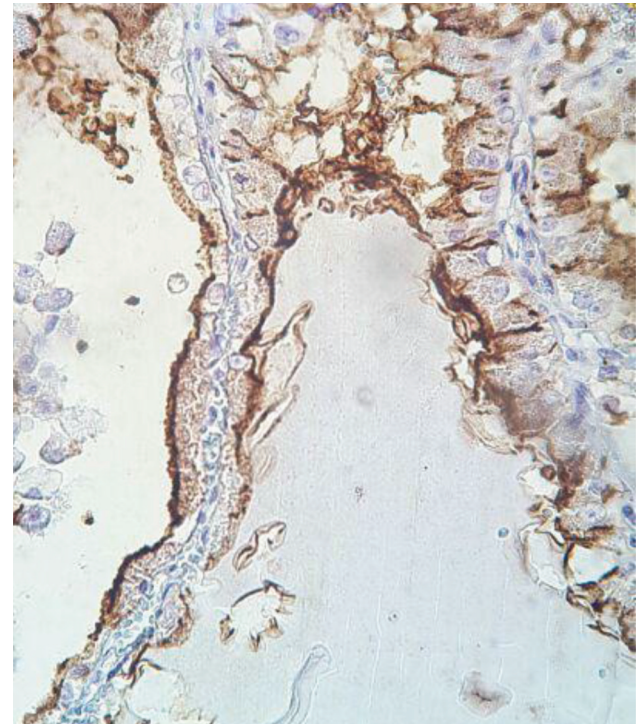


Figure 4. Immunohistochemical staining for CD10 (40×).

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