

Papillary renal cell carcinoma within a renal oncocytoma: Case report of very rare coexistence

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Abstract

Renal oncocytomas accounts for 3% to 9% of primary renal neoplasms. The coexistence of renal cell carcinoma (RCC) within the oncocytoma is extremely rare. We report the case of an asymptomatic 74-year-old man with papillary RCC within oncocytoma managed with left radical nephrectomy.

Introduction

Renal oncocytomas are rare benign neoplasms accounting for 3% to 9% of all primary renal neoplasms.¹ Although most are asymptomatic and discovered incidentally, a few symptomatic patients may complain of hematuria, flank pain, or palpable mass.^{1,2} Oncocytomas are usually unifocal, but multifocal and bilateral appearances of the oncocytomas and concomitant renal cell carcinoma (RCC) have been reported.³ To our knowledge, only 3 cases of papillary subtype of RCC within a renal oncocytoma have been previously described in the literature.⁴⁻⁶ In this case report, we present the fourth case of papillary RCC embedded in a renal oncocytoma.

Case report

A 74-year-old man with no medical history was referred to us due to a hyperechoic left kidney mass on routine abdominal ultrasound. He had a 50-packets/year smoking history. Physical examination was unremarkable, and laboratory findings were within normal values, with hemoglobin of 14.8 g/dL and creatinine 1.02 mg/dL. His computed tomography scan of the abdomen confirmed a 6 × 5-cm left renal mass located between the renal hilum and lower pole.

He underwent a left radical nephrectomy through a left flank incision without perioperative complications. The patient fared well postoperatively and was discharged on postoperative day 3.

Specimen examination revealed a 5 × 5 × 4.5-cm hemorrhagic, necrotic, gray, brown and red mass at the lower pole of the left kidney. There was another 1.7 × 1.5 × 1.5-cm yellow and orange colored mass within the tumoural mass. Microscopic examination revealed the outer zone of the tumoural mass as oncocytoma. There was a 1.5-cm uncapsulated, papillary and eosinophilic mass within the oncocytoma. Immunohistochemically, E-cadherin and Pax2 stained positively in oncocytoma areas. CD117 staining was weakly positive (Fig. 1). The papillary mass' immunophenotypic expression had positive vimentin and cytokeratin 7 – we concluded he had papillary RCC (Fig. 2).

The tumour stage was assessed as T1N0MX according to the American Joint Committee on Cancer (AJCC) classification. The patient did not receive adjuvant therapy. No recurrence or metastasis was seen at the 18-month follow-up.

Discussion

Renal oncocytoma, first described by Zippel in 1942, is a relatively non-frequent neoplasms arising from intercalating cells of the cortical collecting ducts.⁷ Clinically, oncocytomas are found incidentally, but hematuria is the most common complaint in symptomatic patients.⁸ The diagnosis of these benign lesions is generally achieved by computed tomography or magnetic resonance imaging.⁷ Unfortunately, most renal oncocytomas cannot be differentiated from malignant RCC by clinical or radiographic criteria. Common imaging findings are central stellate scar and spoke-wheel pattern of feeding arteries, but these findings are usually unreliable for the preoperative differential diagnosis.⁹ Therefore, these tumours should be treated operatively, like RCC, with radical nephrectomy, nephron-

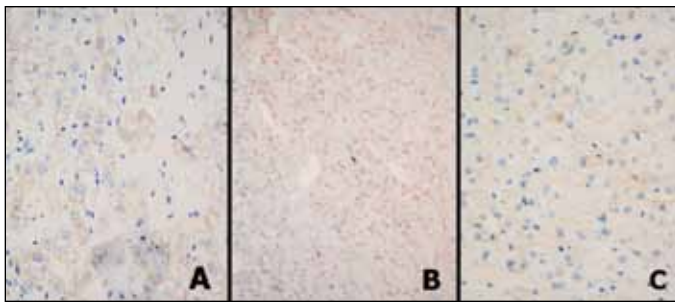


Fig. 1. Immunohistochemical staining of oncocytoma areas (A) Positive E-cadherin expression ($\times 400$). (B) Positive Pax2 ($\times 200$). (C) Weakly positive CD117 expression ($\times 400$).

sparing surgery and minimally invasive approaches, such as cryo- and radiofrequency ablation.^{9,10}

Papillary RCC comprises 10% of RCCs and has a better prognosis when compared with clear cell RCC.¹ Two subtypes of papillary RCC have been described. Type 1 tumours have papillae covered by a single layer of small uniform cells with scant amphophilic to basophilic cytoplasm and low nuclear grade. In type 2 tumours, the tumours include columnar cells with eosinophilic cytoplasm and they have a high nuclear grade.^{1,11}

Renal oncocytoma and RCC can coexist in the same or the contralateral kidney.⁶ Chromophobe RCC and oncocytoma are suspected to be closely related and are thought to show a similar distal tubular phenotype. However, oncocytomas and papillary RCCs originate from different cells and the presence of a papillary RCC within an oncocytoma is extremely rare. We were only able to identify 3 case reports with this coexistence.⁴⁻⁶ All tumours were detected incidentally during imaging studies for other reasons and none of these were larger than 4 cm. Two of these cases were treated with partial nephrectomy and one with radical nephrectomy. In our case, we performed radical nephrectomy because the 5 cm in diameter tumour was close to the renal hilum. This case, which has the largest renal oncocytoma and papillary RCC diameter also had the longest follow-up period among the cases reported so far (Table 1).

Conclusion

Sometimes chromophobe RCC arises within a renal oncocytoma. However, the combination of papillary RCC and

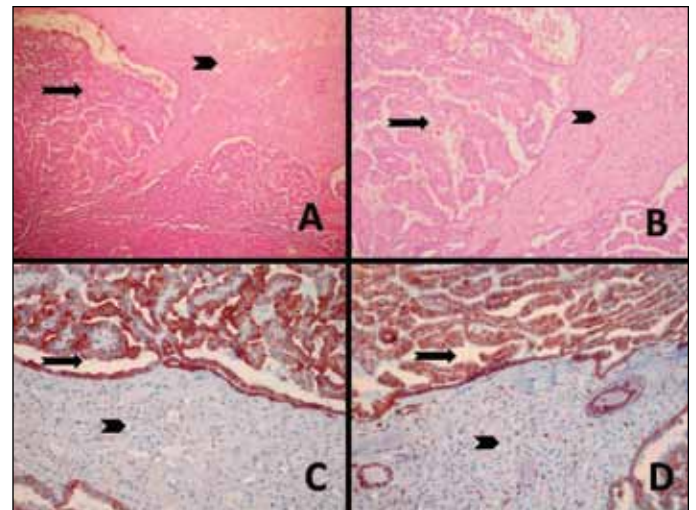


Fig. 2. (A) On hematoxylin-eosin (H&E) staining ($\times 40$), papillary renal cell carcinoma (RCC) (arrow) within the renal oncocytoma (arrowhead). (B) Oncocytoma (arrowhead) and papillary RCC (arrow) on H&E staining ($\times 100$). (C) Positive staining with vimentin ($\times 200$) in papillary RCC (arrow), negative staining in oncocytoma (arrowhead). (D) Positive staining with cytokeratin 7 ($\times 200$) in papillary RCC (arrow), negative staining in oncocytoma (arrowhead).

oncocytoma is extremely rare because these tumours are developed from different origins. This case shows us once again that although very rare, renal oncocytoma may contain malignant tumour, such as RCC. Therefore, even if the radiological screening strongly suggests that the tumour is oncocytoma, this rare entity should also be kept in mind.

Competing interests: Authors declare no competing financial or personal interests.

This paper has been peer-reviewed.

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Table 1. Summary of the cases reported so far and current case

	Age (years)	Sex	Tumour size (PRCC/RO)	PRCC subtype	Tumour side	Treatment	Follow-up (months)
Roswell et al. ⁴	75	Male	7/15 mm	Type 1	Left	Partial nx.	n/a
Floyd et al. ⁵	73	Female	1.5/36 mm	Type 2	Left	Partial nx.	n/a
Sebjén et al. ⁶	68	Male	10/35 mm	Type 2	Right	Radical nx.	8
Current case	74	Male	15/50 mm	Type 2	Left	Radical nx.	18

PRCC: papillary RCC; RO: renal oncocytoma; nx.: nephrectomy.

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