

Papillary renal cell carcinoma with abscess formation: A report of three cases

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ABSTRACT

We report three cases of renal cell carcinoma (RCC) associated with abscess formation. Such association has been reported uncommonly in literature. Our cases were unique in that final histopathological report was papillary RCC in all of the patients.

INTRODUCTION

Renal cell carcinoma (RCC) can have varied presentations. Most RCCs are diagnosed incidentally.^[1] In some cases, renal masses and inflammatory lesions may appear similar.^[2,3] Large RCCs tend to have necrosis at center and this provides a good ground for bacterial proliferation.^[4] This necrosis compounded with bacterial infection can lead to abscess formation.^[5] There are only isolated case reports of RCC presenting as renal abscess, and majority have been reported with upper tract urothelial cancers or clear cell RCC.^[6-10] We report three cases of papillary RCC associated with abscess formation.

CASE REPORTS

Case 1

A 75-year-old gentleman with no comorbidities presented with complaints of the right flank pain, fever, and melena for the past 3 months. He has a normal blood workup (hemoglobin [Hb]: 13.8 gm/dl, total leukocyte count [TLC]: 8300/mm³, and urea/creatinine: 37/0.94) with raised serum carcinoembryonic antigen (106 ng/ml); contrast-enhanced computed tomography (CECT) whole abdomen showed

4.4 cm × 4.8 cm exophytic, isoechoic, well-defined mass in the upper pole of the left kidney and an asymmetrical circumferential mural thickening of the cecum and ascending colon [Figure 1a and b]. Colonoscopy and biopsy showed poorly differentiated carcinoma right colon.

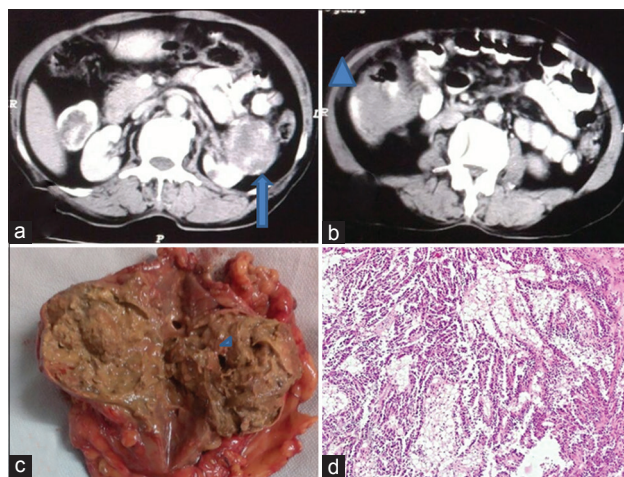


Figure 1: Case 1. (a) Computed tomographic image showing a well-margined, heterogeneous exophytic mass (4.86 cm × 5.49 cm) in the upper pole with foci of calcification. (b) Computed tomographic image showing markedly thickened wall of the cecum, ascending colon, and terminal ileum, forming a mass of 9.9 cm × 7.83 cm. (c) Cut specimen showing extensive pus formation. (d) Photomicrograph showing the papillary renal cell carcinoma Grade 1

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Guided fine-needle aspiration cytology from renal mass was done to rule out possibility of metastases from the colon and revealed only necrotic material. The patient underwent *en bloc* resection of colonic mass with left adrenal sparing radical nephrectomy. The specimen showed extensive suppuration in a renal mass [Figure 1c]. Histopathological examination (HPE) was suggestive of mucinous adenocarcinoma of the colon and papillary carcinoma nuclear grade 1 of the left kidney [Figure 1d].

Case 2

A 61-year-old gentleman, hypertensive on irregular treatment, presented with complaints of early satiety and right flank pain with fever for the past 10 days. Examination revealed tenderness in the right hypochondrium and the right costal angle. His blood work was normal (Hb: 12.2 gm/dl, TLC: 8300/mm³, urea/creatinine: 34/1.1). CECT abdomen showed 8 cm × 9 cm well-defined mass arising from the lower pole of the right kidney with few anechoic areas and multiple echogenic foci [Figure 2a and b]. The patient underwent laparoscopic right radical nephrectomy which required conversion to open surgery in view of dense adhesions between colon and parietal wall, right kidney, and diaphragm. On section, there was extensive suppuration inside the kidney [Figure 2c]. Final HPE showed it to be papillary carcinoma [Figure 2d].

Case 3

A 60-year-old woman presented with complaints of fever and hematuria for 2-month duration. Her physical examination and blood investigations were normal. CECT whole abdomen showed a 5 cm × 6 cm endophytic Bosniak Type 4 cyst at the upper pole of the right kidney with possible pelvicalyceal system involvement [Figure 3a and b]. The patient underwent right radical nephrectomy. The

specimen after surgery revealed a cystic mass full of purulent material [Figure 3c] which grew *Escherichia coli* on culture. Postoperative recovery was uneventful. Her final HPE report was suggestive of papillary RCC, Fuhrman grade 2 capsular, and perinephric fat invasion [Figure 3d].

DISCUSSION

RCC with abscess is not a common presentation. In some patients, there may be frank clinical features mimicking a renal abscess in an underlying tumor, leading to misdiagnosis and delay in treatment.^[6] We present three cases where the specimen showed extensive suppuration and all of them turned out to be papillary RCC. Thus, finding of pus should not be diagnosed as an infective pathology since it can have associated malignancy. Among the histological variants of RCC, necrosis is more commonly seen in the papillary variant.^[11] Large size renal tumors can lead to necrosis at center, and this would be especially true for papillary cancers, which are known to be hypovascular with prominent central necrosis.^[4,12] This necrosis provides ground for the hematogenous bacteria to settle inside the tumor leading to abscess formation.^[4,5]

As imaging is the primary modality of diagnosing renal masses, imaging features in such cases may reveal confusing picture and it may be difficult to make diagnosis of RCC.^[6,11] Some fungal infections or chronic bacterial infections of kidney can have heterogeneous appearance with infiltrative mass-like picture on CT.^[2] Thus, guided fine-needle aspiration or biopsy may be undertaken in such cases. However this may be misleading if it reveals only pus or necrotic material as in our index Case 1. We extensively reviewed the literature searching for such presentations. Only an isolated case report of papillary RCC with abscess formation was found in available literature.^[13] We believe

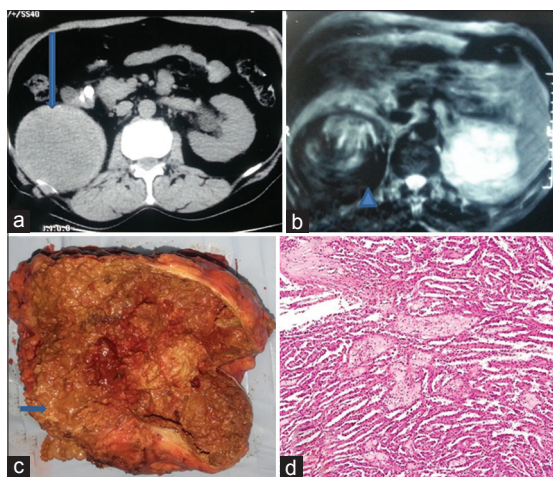


Figure 2: (a) Computed tomographic image heterogeneous right Renal mass 13.2 cm × 8.5 cm, replacing entire right kidney, with mural calcifications. (b) Magnetic resonance imaging showing a 10 cm × 9 cm well-defined lobulated lesion with areas of necrosis which is hypo- or iso-intense on T2. (c) cut specimen showing extensive pus formation. (d) Photomicrograph showing papillary carcinoma with calcifications and osseous metaplasia

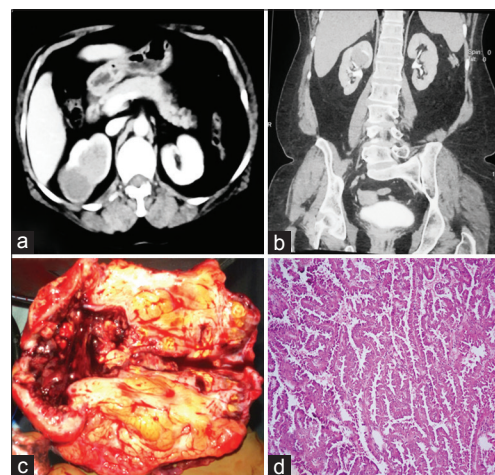


Figure 3: (a and b) Computed tomographic image showing Bosniak Type 4 cyst at the upper pole of the right kidney in axial section and coronal section. (c) Postright radical nephrectomy specimen showing cystic mass with purulent material inside. (d) Low-power photomicrograph (×10) showing the papillary architecture of tumor with fibrovascular core

that knowledge of such an association will lead to careful screening of the gross specimen both by urologists and the pathologist to detect an underlying malignancy in cases with extensive suppuration in a renal lesion.

CONCLUSION

Our current report suggests that RCC can coexist with abscesses. Therefore, aspirate/biopsy from renal mass that shows pus should not preclude coexisting cancer Extensive suppuration in a renal mass suggests an underlying papillary variety of RCC.

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