Type 1 Papillary Renal Cell Carcinoma Presenting as an Infected Benign Renal Cyst: an Uncommon Presentation

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Abstract

We describe an unusual presentation of papillary renal cell carcinoma in a 40-year old male where radiological evaluation revealed a Bosniak type 2 cyst (probably benign), and clinical signs as well as symptoms also suggested an infected cyst. However, on histopathological examination, an intra cystic type 1 papillary renal cell carcinoma was diagnosed. This is an extremely rare presentation of papillary renal cell carcinoma because it usually present as a heterogenous mass. Hence, even the radiologically benign cyst should be evaluated and managed cautiously.

Keywords Carcinoma · Intracystic · Papillary · Renal cell · Type 1

Introduction

Papillary renal cell carcinoma (PRCC) is the second most frequent malignant neoplasm of the adult kidney. It accounts for 10–15% of all renal carcinomas. Grossly PRCC are encapsulated solid tumors which are multifocal in 80% of the cases are also commonly associated with areas of hemorrhage, necrosis, and cystic degeneration [1]. Radiologically, they have unique characteristics such that they present as a heterogeneous mass which enhances to a lesser degree than renal cortex [2]. In this case report, we describe an unusual presentation of type 1 PRCC, where the clinical presentation was suggestive of infected renal cyst. It was only after histopathological examination that the diagnosis of PRCC was made. To the best of our knowledge, this is the second case report where PRCC has been described as an intracystic lesion.

Case Report

A 40-year old male patient presented in the urology department of King George's medical college, Lucknow, India with chief complaint of abdominal distension and pain for 3 months which was associated with dysuria. There was no history of hematuria, weight loss, loss of appetite, fever, or any other medical illness. The patient was a smoker for 20 years.

The physical examination was largely unremarkable beside some abdominal tenderness and distention. Routine hematological and urine work up were largely within normal limits. CT scan abdomen showed the presence of a well-defined round hypodense lesion with marginal calcific density arising from the inferior pole of the left kidney. The lesion measured 43 × 39 mms. Attenuation value was +45HU. There was no evidence of backpressure changes in the pelvicalyceal system. Left ureter was seen in its entire extent displaying normal course and caliber. The parenchymal thickness of the kidney was adequate with normal nephrogenic density (Fig. 1), hence radiologically diagnosed as cystic lesion Bosniak type 2.

Diagnostic tap was performed from the cyst, and material was sent for cytological examination. Cytology smears were paucicellular and showed the presence of many scattered foamy macrophages on a hemorrhagic background and was hence reported as being cystic lesion. A possibility of infected cyst was kept, based on clinical and radiological findings, and partial resection was planned. After general anesthesia, left

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Fig. 1 **a** CT scan abdomen showing presence of a well defined round hypodense lesion with marginal calcific density arising from the inferior pole of left kidney. **b** A partial nephrectomy specimen displaying uniloculated cyst measuring $\sim 4 \times 4$ cms, which was capsulated and filled with whitish material. Normal renal parenchyma identified around it at the periphery. **c** Microscopy displaying a capsulated neoplasm with a papillary pattern. (Hematoxylin and eosin stain; $\times 200$). **d** Microscopy displaying papillae lined by atypical cuboidal cells with moderate amount of cytoplasm and macrophage in their fibrovascular core (Hematoxylin and eosin stain; $\times 400$)

partial nephrectomy was performed, and specimen was sent for histopathological examination. Grossly, a uniloculated cyst was identified measuring $\sim 4 \times 4$ cms, which was capsulated and filled with whitish material. Normal renal parenchyma was identified around it (Fig. 1b). On microscopic examination, an encapsulated neoplasm was identified displaying a papillary architecture. These papillae were composed of cuboidal cells with mildly anisomorphic nuclei, dispersed chromatin, inconspicuous nucleoli, and scant to moderate amount of pale cytoplasm. These papillae had a fibrovascular core and showed the presence of foamy macrophages at places. These findings were suggestive of type 1 papillary renal cell carcinoma (Fig. 1c). The tumor was confined within the renal parenchyma. Renal sinus and ureteric resection margins were free of any invasion. Following this diagnosis, a repeat thorough radiological examination was done for any pelvic lymphadenopathy which was absent. The patient was discharged after an uneventful post operative course and is kept under follow-up.

Discussion

Papillary renal cell carcinoma is now a well-established entity with a distinct morphological, immunohistochemical, and cytogenetic features. Papillary renal cell carcinoma was individualized from other renal cell carcinomas by its predominantly papillary or tubulo-papillary architecture ($> 75\%$ of the tumor). In 1976, Mancilla-Jinenez

et al. for the first time did the clinicopathological and radiological study of this neoplasm and described their better prognosis as compared to other non papillary renal cell carcinomas [3].

Grossly PRCC are usually well circumscribed, globular tumor with a friable or granular cut surface. They are commonly associated with hemorrhage and necrosis. Cystic degeneration may be seen but presentation as an entire cystic lesions is very rare. To the best of our knowledge, the presence of a necrotic cavity within a papillary RCC has rarely been described. When searched on PubMed, only one such reported case was identified where a type 2 PRCC presented as an intracystic necrotic lesion [4].

Certain characteristics of a cystic renal mass including the character of the lesion wall, septation, calcification, nodularity, CT attenuation values, and enhancement are suggestive of a particular diagnosis. Bosniak classification of renal cyst is used to radiologically define the likelihood of the cyst being benign or malignancy. Types 1 and 2 cysts almost always likely to be benign. However, types 2F and 3 require follow-up and have 5 and 50% chances respectively of being malignant [5]. On the contrary, type 4 is always malignant. In the present case, the cyst was radiologically defined as Bosniak type 2, i.e., likely to be benign. The extensive cavitations leading to a perception of a benign cyst can be explained either a result of gastrointestinal gaseous collection through disrupted renal parenchyma or due to extensive cystic degeneration. Although our patient presented with some abdominal

discomfort with the presence of intact renal capsule and of many foamy macrophages suggests a degenerative change.

Hence to conclude, we describe a rare presentation of PRCC in the form of a cyst belonging to Bosniak type 2 categories which was initially misdiagnosed as an infected cyst but finally was confirmed as a PRCC. Hence, the radiological benign renal cyst/lesions should also be evaluated cautiously with a proper follow-up.

Compliance with Ethical Standards

Conflict of Interest None of the authors have any conflict of interest, including specific financial interests or relationship and affiliations relevant to the subject matter or materials discussed in the manuscript

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