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Case Report

Primary Well Differentiated Squamous Cell Carcinoma of Kidney: A Rare Entity

Sunita Singh, Meenu Gill, Ashima Batra, Shruti Semwal, Aarzoo Jahan, Rajeev Sen

Pt. B D Sharma PGIMS Rohtak, India

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Corresponding Author:
Ashima Batra
Pt. B D Sharma PGIMS Rohtak, India
drashimabatra@gmail.com

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Abstract

Cancers of the kidney and renal pelvis are the ninth most common malignant cancer and form the 12th most common cause of all cancer-related deaths. Among malignant renal tumors, squamous cell carcinoma is rare neoplasm and form only about 0.5–8%. We present a case of 60 years old male with complaints of pain in the loin and hematuria for past 2 months. The patient underwent nephrectomy for renal mass initially diagnosed on ultrasonography (USG) and computerized tomography (CT) scan, which turned out to be squamous cell carcinoma on histopathological examination.

INTRODUCTION

Primary renal squamous cell carcinoma (RSCC) is a rare cancer with a variable incidence of about 0.5–15% of all urothelial cancers [1]. It occurs six times more frequently in the renal pelvis than in the ureter. These are moderately to poorly differentiated tumors which are more likely to be invasive and in advanced stages at the time of their diagnosis [2]. Most of the patients have a history of chronic urolithiasis, renal infection or analgesic abuse [3]. Although being non specific, a solid mass, hydronephrosis and calcifications are common radiologic findings which may explain why the diagnosis could be missed before the histopathological examination [4].

CASE PRESENTATION

A 60 years old male presented with complaints of pain in left loin and intermittent hematuria since 2 months. The patient also gave past history of renal stones for which he underwent lithotripsy one year back. Clinical examination revealed abdominal fullness and tenderness.

Routine hematological investigation was normal. Biochemical investigation revealed blood urea 55 mg/dl and serum creatinine 1.5 mg/dl. Urine examination revealed microscopic hematuria. Ultrasound abdomen showed enlarged left kidney with an altered echopattern and multiple cystic spaces. Right kidney was normal. Other abdominal organs were normal and there was no evidence of any lymphadenopathy. Contrast enhanced computerized tomography (CECT) abdomen also revealed heterogeneous enhancing mass in left kidney with no evidence of infiltration into abdomen or any lymphadenopathy. The metastatic work-up including bone scan was negative. Exploratory laparotomy revealed left renal mass with no extension into abdomen. No pre/periaortic lymph nodes were visualized. The patient underwent nephrectomy for the same.

We received left nephrectomy specimen measuring 17×7×5 cm. Almost whole of the parenchyma was replaced by grey white tumor also obliterating the renal pelvis. Multiple cystic cavities suggestive of chronic pyelonephritis were seen in the uninvolved parenchyma. (**Figure 1**)

Microscopically, the gray white areas showed a well differentiated squamous cell carcinoma with formation of keratin pearls in the renal pelvis (**Figure 2 a-c**). The urothelium adjacent to tumor showed squamous metaplasia and dysplasia (**Figure 2a**). The tubulointerstitial compartment of the kidney revealed dense mononuclear inflammatory cell infiltrate, and cystic dilated tubules with hyaline casts, which is described as thyroidization (**Figure 2d**). The tumor was

confined to kidney, the perinephric fat being free from tumor.

The patient was started on cisplatin based therapy. He is well and under regular follow-up for last 6 months.

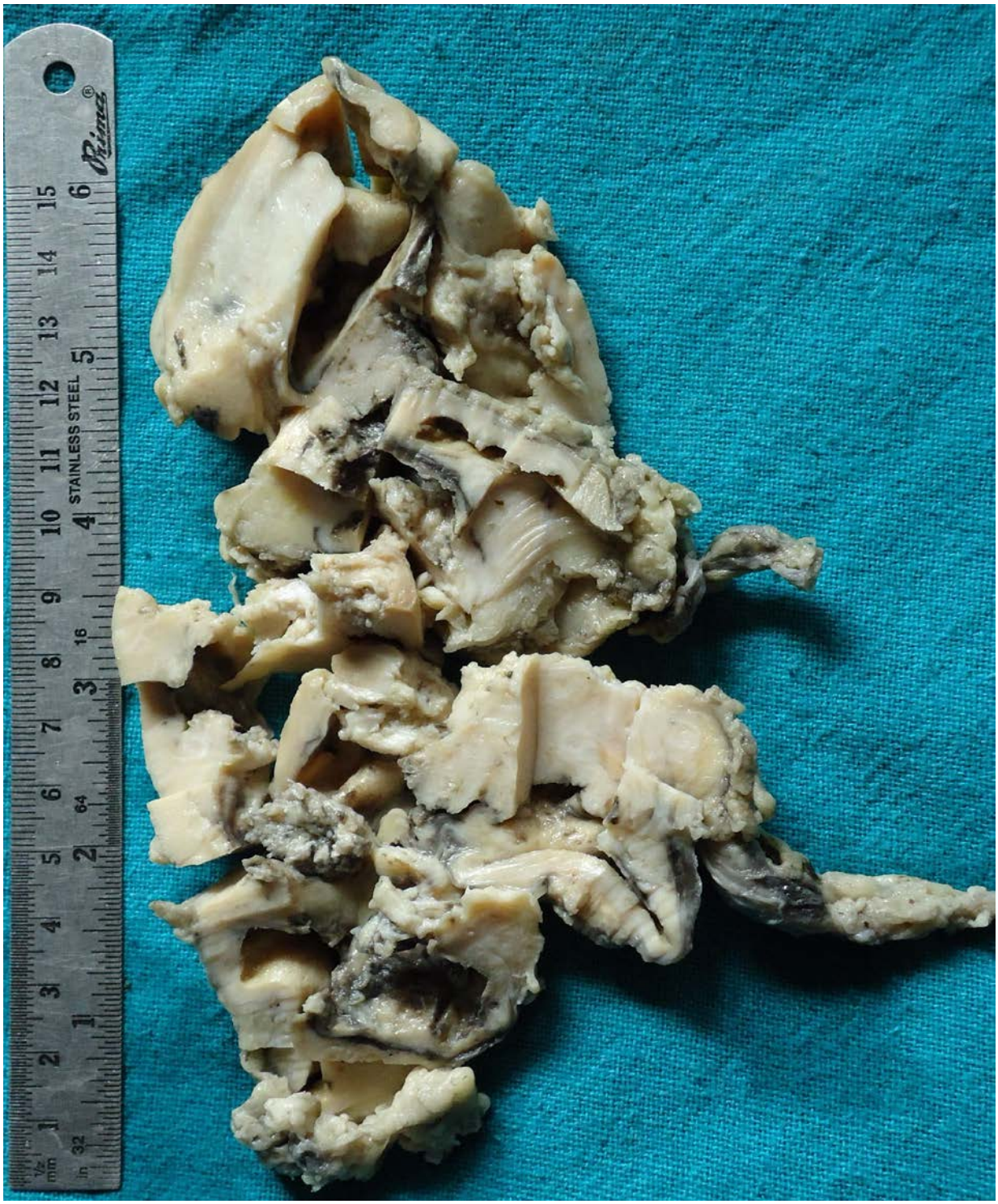

Figure 1. Gross specimen of kidney shows replacement of almost whole of the parenchyma by grey white tumor, also involving the renal pelvis. Cystic cavities suggestive of chronic pyelonephritis were seen in the uninvolved parenchyma.

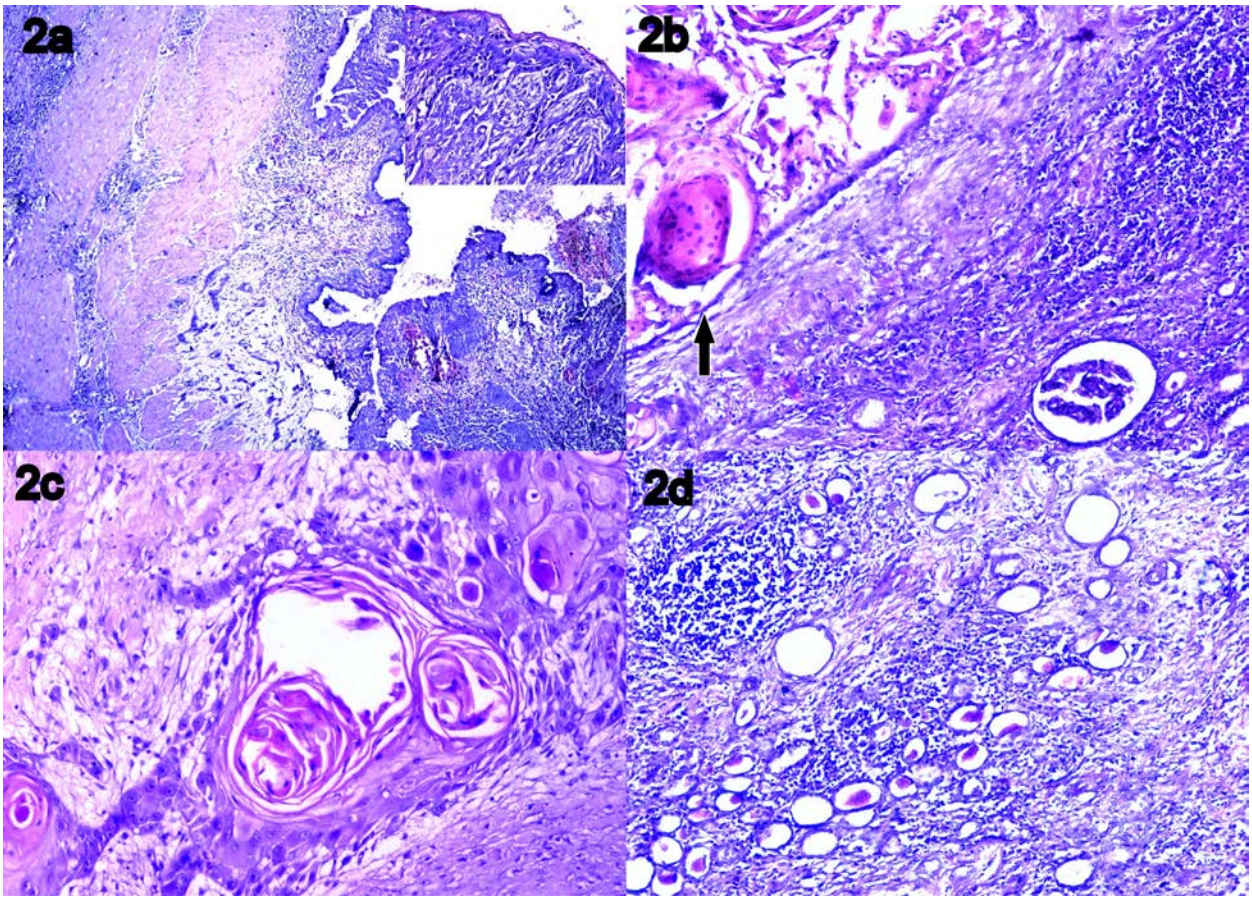

Figure 2. [a] Microphotograph shows squamous metaplasia and dysplasia in ureteral epithelium with squamous nests invading into subepithelial tissue; inset picture reveals dysplasia at higher magnification (H&E, x40; x200 for inset picture). [b and c] Well differentiated squamous cell carcinoma is involving the renal parenchyma (H&E, x100 for both). [d] The renal parenchyma also shows evidence of chronic pyelonephritis as evidenced by interstitial dense lymphoid aggregates and thyroidization of tubules (H&E, x100).

DISCUSSION

Cancers of the kidney amount to 2% of all the total human cancer. Primary tumors of the renal pelvis are quiet rare accounting for only about 4-5% of all urothelial tumors [5]. The most common renal malignancy in adult is clear cell carcinoma followed by papillary carcinoma and chromophobe cell carcinoma [6]. Among malignant renal tumors, SCC is extremely rare neoplasms and form only about 0.5-8% [5]. These tumors are mostly seen in adults and less commonly in paediatric age groups [6]. The mean age of presentation is 56 years with no predilection for side or sex. The tumor is mostly unilateral and presentation is usually silent with most patients presenting with nonspecific features such as pain and hematuria [5]. They are frequently associated with long standing renal calculi, chronic kidney infection, hydronephrosis, chronic analgesic abuse and squamous metaplasia [4]. Urinary calculi are accepted as a main carcinogenic risk factor for squamous cell carcinoma and a reported incidence of coexisting renal stones is seen in 100% cases [4]. Other factors implicated include exogenous and endogenous chemical, Vitamin A deficiency, hormonal imbalance, schistosomiasis [6]. Smoking or tobacco chewing was also observed in 60% of the patients as a known predisposing factor [7]. Hypercalcemia, leukocytosis and thrombocytosis have been reported as a part of paraneoplastic syndromes in RSCC cases [4]. Our patient had history of renal stones and presented with non specific symptoms of pain and hematuria.

Lee et al classified primary renal squamous cell carcinoma into two categories based on the location of the tumor – the central and the peripheral types [8]. The central type had more rates of lymph nodal metastasis and the peripheral type showed parenchymal thickening with perirenal infiltration. The central type had poorer survival rates [5].

The tumor can be documented by conventional radiological imaging modalities. Filling defects or obstructive lesions in the renal pelvis by

intravenous/retrograde urography or detection of a solid mass by ultrasonography can be the signs of the tumour [7]. Most helpful features in CT of RSCC are presence of enhancing extraluminal and exophytic mass and, in some cases, an intraluminal component [1].

These tumours are highly aggressive and are at high stage when detected. Most of them are histologically high grade and outcome is generally unfavorable. Extensive infiltration of the renal parenchyma and retroperitoneal soft tissues are very common.7

Current primary treatment of renal squamous cell carcinoma is nephrectomy. Chemotherapy or radiotherapy is indicated in metastatic disease. A combination chemotherapy including cisplatin, methotrexate and bleomycin is used in metastatic disease [4].

To conclude the diagnosis of squamous cell carcinoma of kidney is difficult on the basis of clinical features and radiological investigations due to lack of characteristic presentation and radiological findings. The pathologist must be aware of this rare entity arising in a setting of renal stones. Its association with renal stones not only warrants early and prompt treatment of renal stones, but also requires the pathologist to search for its evidence especially in renal pelvis.

CONFLICTS OF INTEREST

The authors declare that they have no conflict of interest.

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