

Squamous Cell Carcinoma of Renal Pelvis with Fungal Infection in a Non-Functioning Kidney—A Rare Entity

Anubha Singh Yadav,¹ Santosh Kr. Singh,² Devendra Singh Pawar,³ S. K. Mathur,⁴ Asha Kumari¹

¹Resident, Department of Urology, Pt. BDS PGIMS, University of Health Sciences, Rohtak

²Senior Professor and Head, Department of Urology, Pt. BDS PGIMS, University of Health Sciences, Rohtak

³Associate Professor, Department of Urology, Pt. BDS PGIMS, University of Health Sciences, Rohtak Department of Urology

⁴Senior Professor, Department of Pathology, Pt. BDS PGIMS, University of Health Sciences, Rohtak

Submitted April 30, 2011 - Accepted for Publication July 3, 2011

ABSTRACT

Squamous cell carcinoma of the urinary tract is a very rare tumor associated with chronic renal calculi and infection. This tumor is highly aggressive and often detected at an advanced stage with a poor outcome. We hereby describe a case report of a 56-year-old male who presented with hydronephrosis and hydroureter in a non-functioning left kidney with ureteric calculi. Histopathology of the nephrectomy specimen revealed unexpected squamous cell carcinoma with chronic pyelonephritis. The pus culture came out positive for fungus—*Geotrichum*.

INTRODUCTION

Squamous cell carcinoma of the renal pelvis and ureter is rare with an incidence of 6 to 15% of all urothelial tumors [1]. Very few cases of primary squamous cell carcinoma of the kidney have been reported in world literature. The insidious onset of symptoms and the lack of any pathognomic sign lead to a delay in diagnosis and treatment.

Squamous cell carcinoma is frequently associated with urolithiasis and hydronephrosis [2-4]. Solid masses, hydronephrosis, and calcifications are common but are nonspecific radiological findings, which may explain why diagnosis is not frequently

established before the histopathological examination of the resected surgical specimen [2]. Early metastatic spread is common and the prognosis is poor with a few patients surviving longer than 5 years [1].

We are reporting the rarest case of squamous cell carcinoma along with infection in the non-functioning kidney.

CASE REPORT

A 56-year-old male patient, non-alcoholic and non-smoker, presented with pain in his left flank for 1.5 months. Examination of the abdomen was unremarkable. He was non-diabetic and

KEYWORDS: Non-functioning kidney; Fungal infection-*Geotrichum*; Squamous cell carcinoma

CORRESPONDENCE: Anubha Singh Yadav, Department of Urology, Pt. BDS PGIMS, University of Health Sciences, Rohtak (uroggi.rohtak@yahoo.com).

CITATION: *UroToday Int J.* 2011 Oct;4(5):art 62. doi:10.3834/uij.1944-5784.2011.10.4

Figure 1. Intravenous pyelography film.

doi: 10.3834/uij.1944-5784.2011.10.4f1



Figure 2. Nephrectomy specimen.

doi: 10.3834/uij.1944-5784.2011.10.4f2

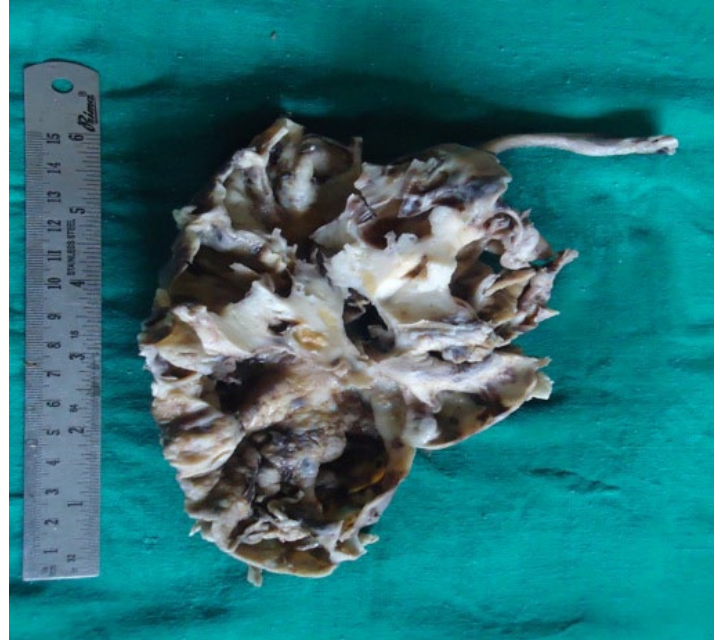
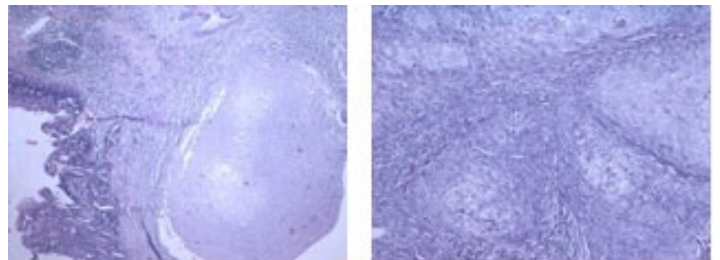


Figure 3. Showing cyst along with malignant squamous cells. Histopathological Examination at 100x and 400x (H and E staining).

doi: 10.3834/uij.1944-5784.2011.10.4f3



HIV negative. On ultrasonography, the left kidney showed grade III hydronephrosis and hydroureter. The right kidney was normal. On IVP, there was non-visualization of the left kidney (Figure 1). A DTPA scan was done and showed 0.0% relative function of the left kidney and a non-obstructed right kidney with 100% relative function.

The patient was diagnosed with hydronephrosis and hydroureter along with a non-functioning left kidney with ureteric calculi. Laparoscopic left nephrectomy with ureteric stone removal was planned and undertaken. On laparoscopy, a densely adherent pyonephrotic kidney with white-colored pus was seen. The pelvis was densely adherent to surrounding structures. Lower ureteric stones were removed and nephroureterectomy was done. On the pus culture, *Geotrichum* fungus was present. A nephrectomy specimen with a segment of ureter on a cut section revealed a dilated pelvicalyceal system and a greyish-white solid area in the pelvis (Figure 2).

The representative microsections examined showed changes of chronic pyelonephritis with extensive squamous metaplasia of the pelvis progressing to moderately differentiated squamous cell carcinoma (Figure 3), stage pT3. A segment of the ureter was unremarkable and free from tumor infiltration. The chemical analysis of the calculus was done and its composition was calcium oxalate and phosphate. Postoperative contrast-enhanced computed tomography was done in which the left kidney was not visualized, and enlarged lymph nodes were seen

Figure 4. Fungal morphology.

doi: 10.3834/uij.1944-5784.2011.10.4f4



in para-aortic area at the celiac axis and superior mesenteric artery on the left side. The follow-up period is 2.5 months without any local recurrence.

DISCUSSION

The relevant medical history of squamous cell carcinoma often includes episodes of chronic pyelonephritis or nephrolithiasis. Mazeman reported that squamous cell carcinoma was associated with calculi in 30 to 60% of these cases [5]. It is believed that chronic irritation of the urothelium leads to squamous metaplasia, which may subsequently develop into squamous cell carcinoma [6, 7]. *Geotrichosis candidum* urinary tract infection was reported in patients with renal stones [8]. Staghorn stones are more likely to be associated with renal pelvic neoplasm. In our case, chronic irritation and superadded fungal infection is most likely the etiology of this rare carcinoma of the renal pelvis.

Ureteral obstruction is the main cause of presenting symptoms. Fungal accretions termed fungal balls are known to cause ureteral obstruction [9]. Diagnosis is difficult since imaging techniques usually only reveal calculi with hydronephrosis and diffuse ureteral obstruction. Therefore, the initial diagnosis of squamous cell carcinoma is mostly based on histopathological examination, as it was in our case.

Some authors reported that the treatment of choice was nephrectomy with total ureterectomy, including a bladder cuff around the ureteric orifice [10]. However, others suggested nephrectomy and only partial ureterectomy [11]. Chemotherapy conveys little benefit and the value of radiotherapy is debatable.

REFERENCES

- Blacher EJ, Johnson DE, Abdul-Karim FW, Ayala AG. Squamous cell carcinoma of renal pelvis. *Urology*. 1985;25(2):124–126. [PubMed](#) ; [CrossRef](#)
- Li MK, Cheung WL. Squamous cell carcinoma of the renal pelvis. *J Urol*. 1987;138(2):269–271. [PubMed](#)
- Kimura T, Kiyota H, Asano K, et al. Squamous cell carcinoma of the renal pelvis with inferior vena caval extension. *Int J Urol*. 2000;7(8):316–320. [PubMed](#) ; [CrossRef](#)
- Busby JE, Brown GA, Tamboli P, et al. Upper urinary tract tumors with nontransitional histology: a single-center experience. *Urology*. 2006;67(3):518–523. [PubMed](#) ; [CrossRef](#)
- Mazeman E. Tumours of the upper urinary tract (calices, pelvis, ureter). *J Urol Nephrol Paris suppl*. 1972;9:1–219.
- Holmång S, Lele SM, Johansson SL. Squamous cell carcinoma of the renal pelvis and ureter: incidence, symptoms, treatment and outcome. *J Urol*. 2007;178(1):51–56. [PubMed](#) ; [CrossRef](#)
- Bhandari A, Alassi O, Rogers C, MacLennan GT. Squamous cell carcinoma of the renal pelvis. *J Urol*. 2010;183(5):2023–2024. [PubMed](#) ; [CrossRef](#)
- Drach GW, Carlton CE, Chenault OW, Dykhuizen RF. Fungal superinfection: geotrichosis of the urinary tract in association with parathyroid adenoma. *J Urol*. 1968;100(1):82–84. [PubMed](#)
- Keane PF, McKenna M, Johnston SR. Fungal bezoar causing ureteric obstruction. *Br J Urol*. 1993;72(2):247–248. [PubMed](#)

10. Dutkiewicz S, Kałczak M. Planoepithelial squamous cell carcinoma of the renal pelvis. *Int Urol Nephrol*. 1994;26(6):631–635. [PubMed](#) ; [CrossRef](#)
11. Mhiri MN, Rebai T, Turki L, Smida ML. Association between squamous cell carcinoma of the renal pelvis and calculi. *Br J Urol*. 1989;64(2):201–202. [PubMed](#) ; [CrossRef](#)