



Incidentally Detected Renal Cell Carcinoma in Non-Functioning Kidney due to Renal Pelvic Stone Disease: A Case Report

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Abstract

The causes of non-functioning kidney includes stones, PUJ obstruction, infections, trauma etc. Simple nephrectomy is the answer for a non-functioning kidney. The urothelial tumors of renal pelvis and ureter can be associated with long standing calculi and subsequent chronic irritation. But, the renal cell carcinoma is usually not associated with renal calculi. We are reporting a case of incidentally detected renal cell carcinoma in a non-functioning kidney specimen.

Keywords: *Simple nephrectomy, squamous cell carcinoma, transitional cell carcinoma, renal cell carcinoma, Histopathological examination.*

Introduction

Simple nephrectomy is the treatment for non functioning kidney, which is commonly as a result of long standing staghorn renal calculi complicated with hydronephrosis or pyonephrosis. One can be surprised after getting histopathology report showing malignancy in a simple nephrectomy specimen which was done for a benign pathology. The number of studies and case reports reporting tumors in specimens from patients undergoing nephrectomy for non-functioning kidney due to kidney stones is limited¹. The squamous cell carcinoma (SCC) and transitional cell carcinoma (TCC) of renal pelvis can be associated with renal stones secondary to chronic bacterial infection and

chronic irritation, but renal cell carcinoma (RCC) is usually not associated with renal stones. Here we report a case of renal cell carcinoma diagnosed on histopathology of non-functioning kidney due to staghorn pelvic stone.

Case Report

An 80 yrs old male patient, farmer by occupation presented with complaints of pain left upper abdomen on and off for 02 yrs. Examination of abdomen was unremarkable. His blood group was A +ve. Haemogram was normal. Urine R/E revealed microscopic hematuria. The blood urea was 76 mg/dl and creatinine was 2.48 mg/dl.

The plain x-ray KUB showed a large staghorn calcular shadow of about 52.6×31.5 mm in left renal

area and two calculi shadows of about 8.6×6.3 mm & 12.5×6.5 mm in right renal area. On ultrasound abdomen, left kidney measured 20.19×8.52 cm in size, grossly hydronephrotic pelvicalyceal system with no evidence of cortical tissue (hydronephrotic sac) with loss of corticomedullary differentiation with large staghorn calculus of 5.39 cm in pelvis.

The right kidney measured 11.02×4.6 cm in size, two calculi of 10 mm and 9 mm in superior calyx without any obstructive changes with normal cortical thickness and normal corticomedullary differentiation. Diethylene Triamine Penta-acetic Acid (DTPA) scan revealed non-functioning left kidney with GFR of 0 ml/min and split function of 0%. The right kidney normal in site, size, shape, preserved perfusion and parenchymal uptake with GFR of 48 ml/min/1.73 m²BSA (Figure 1).

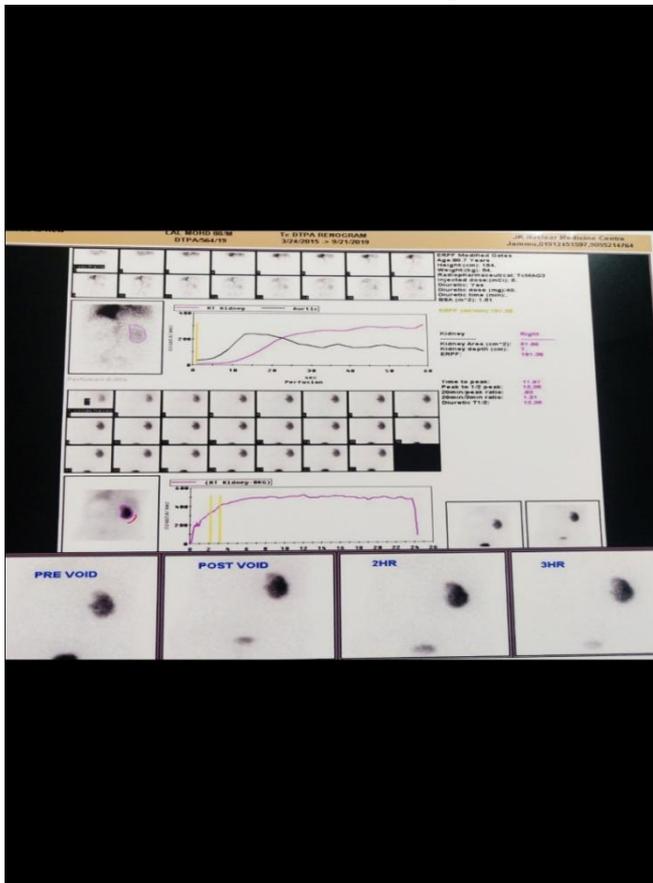


Figure 1: DTPA scan showing non-functioning left kidney.

Left nephrectomy was performed for left non-functioning kidney via flank approach. Intraoperatively left kidney was about 20×10 cm in size, grossly hydronephrotic with dense surrounding

adhesions with enlarged hilar lymph nodes. On gross examination of specimen, kidney was hydronephrotic with about 5×5 cm staghorn pelvic calculus with massively dilated pelvicalyceal system with loss of corticomedullary junction with about 5 cm greyish growth in mid zone (Figure 2 and 3).

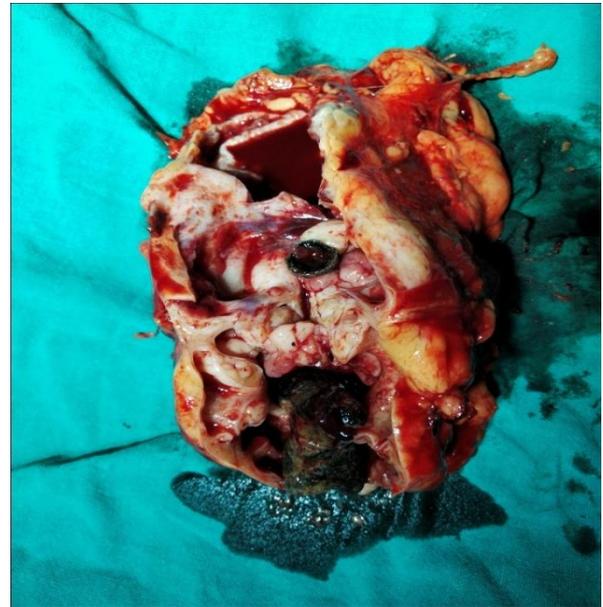


Figure 2: Left nephrectomy specimen showing hydronephrosis, growth in mid zone and large pelvic stone.

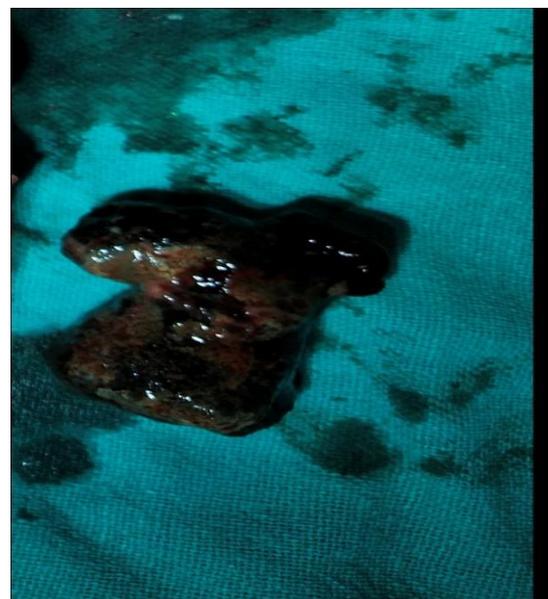


Figure 3: Large stone from pelvis of left kidney.

The histopathology showed renal cell carcinoma (Furhman Nuclear Grade 3) infiltrating into adjacent calyceal system, perirenal fat and blood vessels with gross hydronephritis and compression atrophy

(Figure 4). All seven lymph nodes showed metastatic deposits.

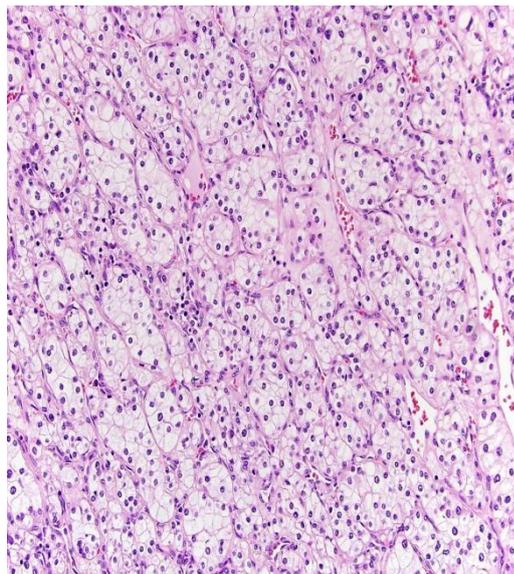


Figure 4: HPE of left nephrectomy specimen showing renal cell carcinoma.

The post operative course was uneventful, with blood urea of 52 mg/dl and creatinine of 1.42 mg/dl on 3rd post operative day.

Discussion

The simple nephrectomy is an important adjunct in the comprehensive management of the unilateral non-functioning kidney due to stones, obstruction, infection, trauma, nephrosclerosis, vesicoureteral reflux, polycystic kidney or congenital dysplasia. The specimen is always to be sent for histopathology examination. The subsequent report may surprisingly reveal a malignancy. The long standing staghorn calculus is one of the etiologies for the development of squamous cell carcinoma and transitional cell carcinoma of renal pelvis²⁻⁴. The association of co-existing urinary stone and squamous cell carcinoma varies between 18% in US to 100% in Hong Kong. Chronic irritation induced by staghorn calculus superimposed by bacterial infection is believed to result in squamous metaplasia and subsequent development of leukoplakia and neoplasia in the urothelium⁵⁻¹⁰. Due to non specific symptoms of flank pain, a renal tumor usually remains unsuspected and further radiological evaluation such as computerized tomography (CT) is not done routinely in every case

of renal stones. So, malignancy should always be suspected in a case of non-functioning kidney due to long standing renal calculi.

Conclusion

There should be a high index of suspicion of malignancy in a non-functioning kidney, particularly due to long standing pelvic staghorn calculi. Moreover, CECT abdomen may also be considered in the patients of non-functioning kidney with normal renal function tests.

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