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Case Study

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A Pathological Surprise in a Non-Functioning Kidney

Kundhavai Chandrasekaran[1], Lawrence D' Cruze[2], Sandhya Sundaram[3*], K. Natarajan[4]

[1]Postgraduate, Department of Pathology, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamilnadu, India; [2]Associate Professor, Department of Pathology, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamilnadu, India; [3]Professor and Head, Department of Pathology, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamilnadu, India; [4]Professor and Head, Department of Urology, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamilnadu, India.

ABSTRACT

Introduction: Upper urinary tract urothelial carcinoma is rare and accounts for about 5-10% of urothelial carcinomas. Grossly it may arise anywhere between the renal calyces to the distal ureter.

Case Report: We report a very rare case of a 65-year-old male whose clinical and radiological diagnosis was pyelonephritis and non-functioning kidney but it turned out to be an unusual presentation of the tumour involving the entire kidney mimicking renal cell carcinoma. The final diagnosis of a high grade invasive urothelial carcinoma with squamous differentiation was rendered on histopathology highlighting the very rare presentation.

Conclusion: We report a rare case of high-grade urothelial carcinoma in a non-functioning kidney.

Key Words: Kidney involvement, Pyelonephritis, Non-functioning kidney, Squamous differentiation, Upper urinary tract tumour, Urothelial carcinoma

INTRODUCTION

Upper urinary tract urothelial carcinoma is relatively rare and accounts for about only 5-10% of urothelial carcinomas.[1]Grossly it may arise anywhere between the renal calyces to the distal ureter.[1,2] The tumour is usually advanced at the time of diagnosis. we report a rare case of urothelial carcinoma of the upper urinary tract.

CASE REPORT

We report a case of a 65-year-old male who presented with right-sided loin pain, decreased urine output and low-grade fever for a week. On examination, right renal angle tenderness was present. So with a clinical diagnosis of right pyelonephritis routine investigations were done. Urine examination showed 5-6 pus cells and urine culture showed E.coli growth. The patient had anaemia and hypoproteinemia.

CT - KUB showed a perinephric fluid collection with the possibility of infective aetiology.CT guided urogram revealed a nonfunctioning kidney with renal abscess extending into perinephric fat. Right ureteritis and cystitis were also seen. DTPA Renogram could not visualise right kidney indicating loss of function of the right kidney and subnormal function of left kidney. So with the clinical and radiological diagnosis of pyelonephritis and non-functioning kidney, open right nephroureterectomy was performed and the specimen was sent for histopathological examination.

PATHOLOGICAL FINDINGS

The right kidney specimen measured 8.7 x 5.4 x 4.5 cm. Grossly, on the cut section, there was a grey white lesion involving the entire kidney and extending into the ureter and perinephric fat mimicking renal cell carcinoma. The lesion was grey-white, soft to firm in consistency with no areas of haemorrhage or necrosis. The corticomedullary junction could not be made out. On microscopy, the lesion was arising from ureter and infiltrating into renal pelvis and renal parenchyma and the perinephric fat with dysplastic changes in the ureter. The lesion was composed of tumour cells arranged in sheets and clusters with individual cells having moderate to abundant eosinophilic cytoplasm and pleomorphic nuclei. Atypical mitosis was also seen. Few areas showed a squa-

Corresponding Author:
Dr. Sandhya Sundaram, Professor and Head, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai-600116, India.
Phone: 9444187687; Email: sandsrid@gmail.com

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moid pattern with intercellular bridges. Resected ureter margins showed carcinoma in situ. The final diagnosis was pT4 pNx Grade 2 Moderately differentiated High-grade urothelial carcinoma with squamous differentiation.

Repeat surgery - Right segmental ureterectomy with bladder cuff resection was done. Grossly it was a 3cm tumour beyond muscularis into periureteral fat. The diagnosis was pT3 pNx High grade invasive urothelial carcinoma.

DISCUSSION

Upper urinary tract urothelial carcinoma is rare. The most common presentation is hematuria(70-80%),[3] and loin pain. The elderly age group is most affected and has a male preponderance.[4] CT urogram is the preferred investigation and cystoscopy and ureteroscopy is preferred for taking biopsies.[1]

Intratubular spread has a very important impact on staging.4 types of intratubular spreads are pagetoid, typical, florid, secondary invasion from the intratubular spread.[2] High-grade tumours have extensive intratubular spread.[2] Urothelial carcinoma histologically has tumour cells arranged in sheets, cords with individual cells having moderate to abundant eosinophilic cytoplasm, pleomorphic nuclei. According to the literature, squamous differentiation is more commonly seen than glandular differentiation in urothelial carcinoma.[5] Squamous differentiation was associated with chronic inflammatory conditions like chronic pyelonephritis. Few studies have shown squamous differentiation associated with poor prognosis.[6]

Sometimes the low-risk patients are treated by kidney sparing surgery.[7] However, the gold standard treatment for upper urinary tract urothelial carcinoma is radical nephroureterectomy with bladder cuff resection.[8] Majority of the patients with upper tract urothelial carcinoma present in higher grade and stage of the tumour. So the upper tract urothelial carcinoma has poor prognosis than the bladder tumour.[9] Recurrences can occur in the bladder.

CONCLUSION

We report a case of upper urinary tract urothelial carcinoma where the clinical diagnosis was pyelonephritis and non-functioning kidney but it turned out to be an unusual presentation of the tumour involving the entire kidney mimicking renal cell carcinoma but the final diagnosis was high grade invasive urothelial carcinoma with squamous differentiation.

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Figure 1: Gross specimen after nephroureterectomy showing the kidney infiltrated by tumor.

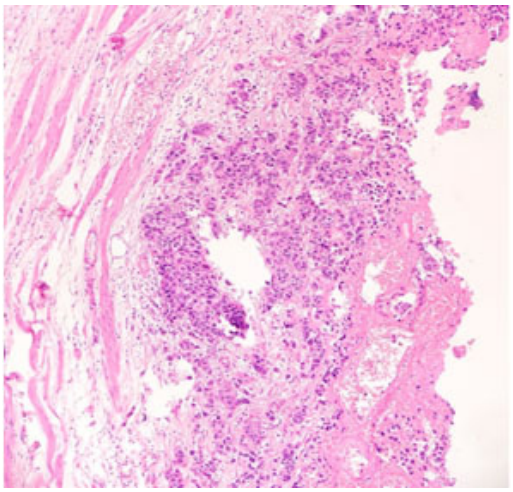

Figure 2: Ureter wall infiltrated with malignant cells (x100).

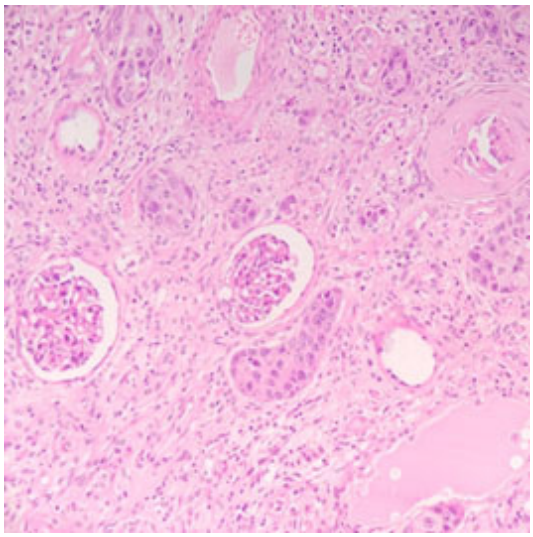

Figure 3: Kidney glomeruli with islands of infiltrated malignant tumor cells with squamous differentiation (x100).

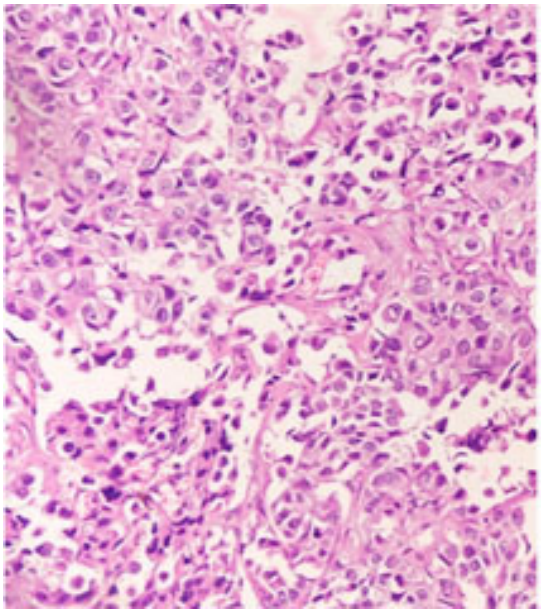

Figure 4: Atypical mitosis in neoplastic urothelial cells (x 400).

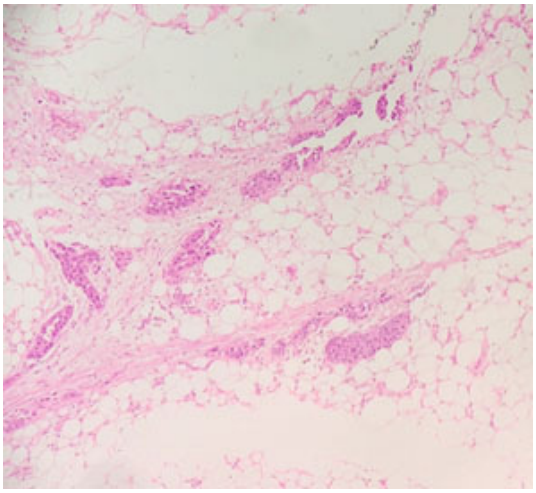

Figure 5: Perinephric fat infiltrated with malignant cells (x100).