

CASE REPORT

Transitional Cell Carcinoma of Kidney- Report of a Rare Case

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Abstract:

Hematuria is a common presentation in the surgical outpatient department. The most common causes being urinary tract infection or renal calculi that causes hematuria. Few of them are being diagnosed as Renal or Bladder mass. Transitional cell carcinoma affecting urogenital tract accounts for 5-10% of the primary renal malignancies which is relatively rare. Here we report such rare case in an elderly female who presented with painless hematuria.

Keywords: Hematuria, Kidney, Transitional Cell Carcinoma

Introduction

Renal Transitional Cell Carcinoma (TCC), or renal Urothelial Carcinoma (UC), is a malignant tumor arising from the transitional (urothelial) epithelial cells lining the urinary tract from the renal calyces to the ureteral orifice. UC is the most common tumour of the renal pelvis. Upper urinary tract TCC accounts to 5% of all urothelial cancers and less than 10% of renal tumours. Surgical intervention is the main form of radical treatment for localized disease. Medical therapy is administered as an adjuvant to surgical therapy or for palliation. The role of radiation therapy is not well defined.

Case Report:

60 years old female, resident of Mumbai presented with chief complaints of painless hematuria since 2-3 months with no other urinary complaints, not suffering from any major medical or surgical illness in the past. Routine blood investigations were normal. Urinalysis showed 8-

10 RBC/HPF, rest biochemical parameters were normal. Ultrasonography of abdomen and pelvis showed single well defined heterogeneous mass measuring 7.9 cms x 6.5 cms x 2.5 cms at upper pole of right kidney. A Computed Tomography (CT) scan of abdomen and pelvis confirmed this as a well-defined hypodense, heterogeneously enhancing mass lesion of approximately 6.9 cms x 4.3 cms x 3.1 cms in the posterior half of right kidney arising from medulla and extending anteromedially into perirenal space. There was splaying of the pelvicaliceal system anteriorly abutting the renal vessels and medially abutting the psoas muscle. Radiologically, a diagnosis of complex renal cyst with Bosniak stage 3/4 was given.

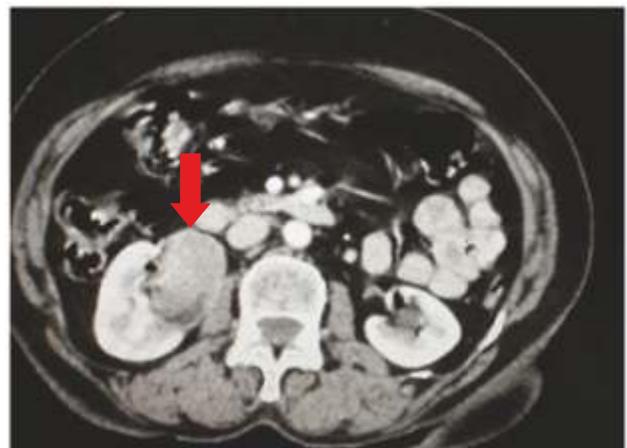


Fig.1: CT scan (Cyst Shown with an Arrow)

Based on the CT scan report the patient was worked up and posted for right nephrectomy. Intraoperatively the mass was not involving any of the surrounding structures or blood vessels. The

mass was not very hard but little fragile with main extension in to renal pelvis. Right kidney along with part of ureter was removed and was sent for histopathological examination.

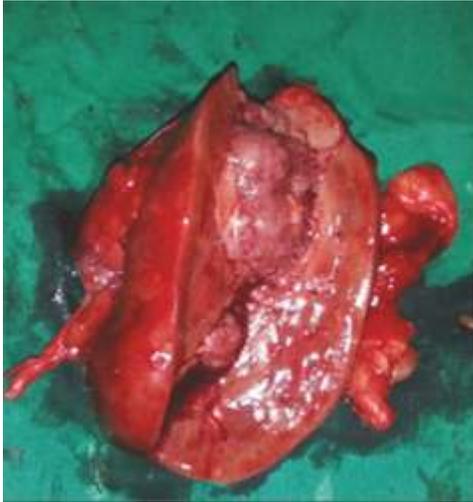


Fig.2: Gross Cut Opened Specimen Showing Tumour in Renal Pelvis

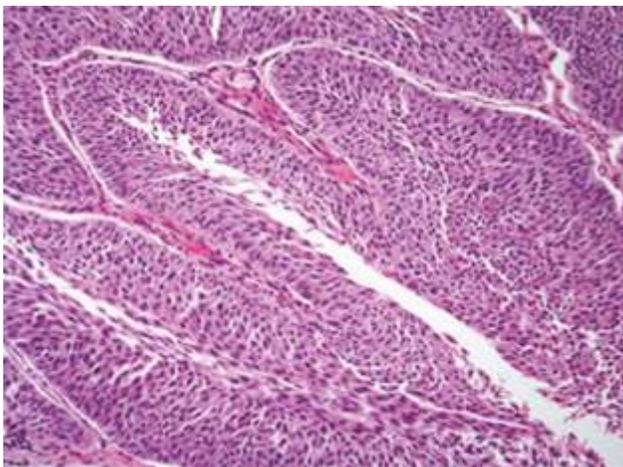


Fig.3: Microscopic Picture of Well Differentiated Papillary Transitional Cell Carcinoma

Grossly the specimen measured approximately 8cms x4cms x 2.5cms with 4 cms ureter. External surface showed bulge in the pelvis region. On cross section the pelvis was cystic and dilated with grey-white granular tumour involving the whole

of the pelvis and extending in upper pole and pelvi-ureteric junction. Rest of the kidney was unremarkable. Microscopy suggested intra-pelvic papillary tumour composed of papillae lined by transitional epithelium with prominent cytological atypia and thin fibro-vascular core. Ureter margin uninvolved and blood vessels free of tumour. Lympho-vascular emboli noted. The final diagnosis was given as TCC Grade III Right renal pelvis.

Discussion

The exact etiology of upper urinary tract TCC is not known. Risk factors include exposure to various chemicals, infections, drugs, genetics, diet, cigarette smoking, analgesic abuse, dietary exposure to aristolochic acid, chemotherapy drugs eg. cyclophosphamide, ifosfamide etc. Chronic bacterial infection with urinary calculus and obstruction may cause UC. In these cases, a squamous cell carcinoma is the most common entity. Schistosomiasis also may predispose to this. In our patient, no risk factor was identified with her disease. She had however been presumptively treated for chronic urinary tract infection without any confirmatory investigations [1].

Tumours of the renal pelvis reportedly rarely occur before age 40 years, with peak incidence in the 60-70 years age group. Male to female ratio is 2:1 [2]. The incidence is slightly higher in African Americans. Unlike these findings, our patient was female, and was within the reported predominant age group for the disease (60 years).

Only a small percentage (1-2%) of patients is asymptomatic. Gross and painless hematuria is the most common presenting symptom, occurring in 75-95% of patients, while microscopic hematuria occurs in 3-11% of patients [3]. Approximately 14-37% of patients report a dull pain attributed to the gradual obstruction of the collecting system. Renal colic also may occur with the passage of blood clots. Physical examination of patients is usually not informative. A palpable flank mass

may be noted in fewer than 20% of patients. The classic clinical triad of hematuria, pain, and mass is also rare (15%) and is usually an indicator of advanced disease.

This tumour is histologically identical to urinary bladder cancer. The two malignancies share the same risk factors and can occur as a part of “field cancerization,” which results from exposure of urothelium to carcinogens excreted by or activated in the urine. Hence, upper urinary tract urothelial tumours may be multifocal, and in 2-10% of cases, they are bilateral as well. In our case, no known risk factor was identified and the tumour was unifocal and unilateral [4].

Tumour size relates to prognosis and range between extremes of 3-12 cm diameter. Grossly these tumours are reported to be soft, grayish red masses with glistening surfaces that resemble the transitional cell tumours of the bladder microscopically and may extend down the ureter. This was similar to our finding.

Investigations include urinalysis, urine culture, urine cytology, cystoscopy guided biopsy. Earlier Intravenous Urography (IVU) was most commonly used but now CT has replaced it [5].

Surgical intervention forms a main radical treatment for localized disease which is uniformly fatal if untreated. Traditional radical surgery in this case consists of total nephroureterectomy with excision of a bladder cuff around the ureteral orifice. This is the procedure that was offered to our patient. Otherwise, 30-75% of patients develop tumour recurrence in the ureteral stump or around the ipsilateral ureteral orifice. In a multicenter study of 1363 patients with upper urinary tract urothelial carcinoma who were treated with radical nephroureterectomy, the 5-year cancer-specific survival probability was approximately 73% [6].

In our case the margins were free of tumour. 20-48% of patients with upper urinary tract UC are at risk of developing Bladder cancer. Our patient primarily had renal medullary tumour extending to pelviureteric junction so, standard nephroureterectomy with excision of bladder cuff around the ureteral orifice may not warrant. However, a meticulous patient monitoring and follow-up recommended by urinalysis, cytology and cystoscopy every 3 or 6 monthly interval.

Table 1: Bosniak Classification System of Renal Cystic Mass

| Class | Description | Features | Workup | % malignant |
|-------|-------------------------------------|--|---------------------------|-------------|
| 1 | Simple cyst | Anechoic, imperceptible wall, round | Nil | ~0% |
| 2 | Minimally complex | Single thin septation, thin calcification | Nil | ~0% |
| 2F | Minimally complex- (need follow up) | Thin septation, thick calcification, hyper dense on CT | USG or CT followup | 5% |
| 3 | Indeterminate | Thick or multiple septation, mural nodule | Partial nephrectomy | 50% |
| 4 | Clearly malignant | Solid mass with cystic spaces | Partial/Total nephrectomy | ~100% |

References

1. Colin P, Koenig P, Ouzzane A, Berthon N, Villers A, et al. Environmental factors involved in carcinogenesis of urothelial cell carcinomas of the upper urinary tract. *BJU Int* 2009; 104: 1436-1440.
2. Balslev E, Fischer S. Transitional cell carcinoma of the renal collecting tubules ("renal urothelioma"). *Acta Pathol Microbiol Immunol Scand A* 1983; 91:419-424.
3. Johansson S, Angervall L, Bengtsson U, Wahlqvist L. A clinicopathologic and prognostic study of epithelial tumors of the renal pelvis. *Cancer* 1976; 37: 1376-1383.
4. Guillou L, Duvoisin B, Chobaz C, Chapuis G, Costa J. Combined small cell and transitional cell carcinoma of the renal pelvis. A light microscopic, immunohistochemical, and ultrastructural study of a case with literature review. *Arch Pathol Lab Med* 1993; 117: 239-243.
5. Vikram R, Sandler CM, Ng CS. Imaging and staging of transitional cell carcinoma: part 2, upper urinary tract. *AJR Am J Roentgenol* 2009; 192: 1488-1493.
6. Auld CD, Grigor KM, Fowler JW. Histopathological review of transitional cell carcinoma of the upper urinary tract. *Br J Urol* 1984; 56: 485-489.

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