Urothelial Carcinoma in a Non-functioning Kidney with Synchronous Contralateral Renal Cell Carcinoma: A Case Report

Kinju Adhikari, MBBS, (FCPS); Sumeet Karna, MBBS, (FCPS); Binod Shrestha, FCPS, MRCS
Department of Urology, B & B Hospital, Gwarko, Lalitpur, Nepal

Address for Correspondence:
Kinju Adhikari, MBBS, (FCPS)
Department of Urology, B & B Hospital, Gwarko, Lalitpur, Nepal
Email: kinjuadhikari@gmail.com

Received, 17 November, 2017
Accepted, 3 December, 2017

Upper tract urothelial carcinoma in a non-functioning kidney with synchronous contralateral renal cell carcinoma is a very rare incidence with very few reports in literature. We report such a case of 62 years male who presented with gross macroscopic hematuria. Radiological evaluation revealed multiple renal stones with gross hydronephrosis on right kidney and solid mass in left kidney. Diuretic renogram confirmed non-functioning of right kidney. Patient underwent simple right nephrectomy and later histopathology turned out to be high grade urothelial tumor. Left partial nephrectomy was delayed for 2 weeks due to ischemic cerebrovascular accident (CVA) of right parietal lobe. The left solid mass histopathology confirmed it as renal cell carcinoma.

Keywords: bilateral renal tumors, non-functioning kidney, renal cell carcinoma, urothelial carcinoma.

Renal cell cancer (RCC) accounts for 2-3% of adult cancers but 90% of all kidney malignancies.[1] Upper Tract Urothelial Cancers (UTUC) accounts for less than 1% of genitourinary neoplasms and 5-7% of all urinary tract tumors. We present a case report of UTUC in a non-functioning kidney with synchronous clear cell carcinoma in contralateral kidney highlighting complex unfortunate situation and challenges that we faced during the management of the patient.

Case Report

A 62-year-old male, past smoker, normotensive, presented with painless

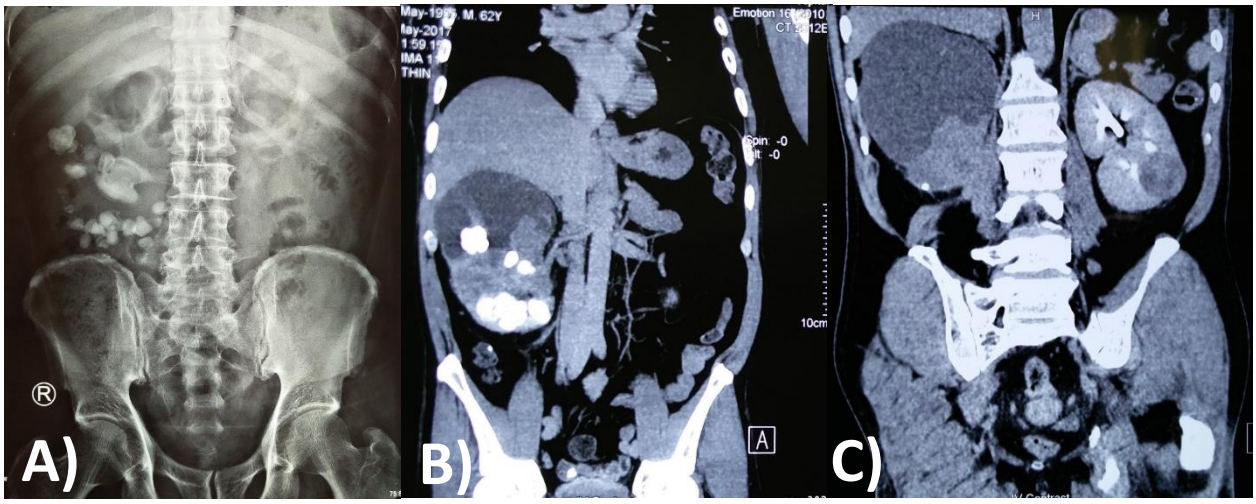
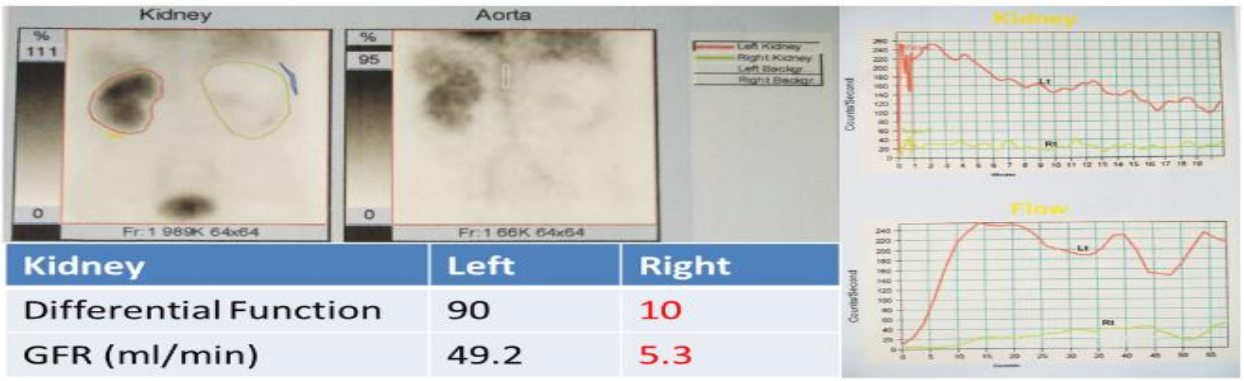


Figure 1: Pre-operative images, A) Plain X-ray Kidney Ureter Bladder (KUB) showing multiple right renal stones, B) Computed tomography (CT) Abdomen showing gross hydronephrosis of upper pole, with mildly enhancing interpolar parenchyma, C) Computed tomography (CT) Abdomen showing left RCC

hematuria since 3 weeks associated with nocturia up to 10 times, but had no fever or any other features of lower urinary tract symptoms (LUTS). Urine routine microscopy confirmed hematuria and no growth of micro-organism in urine culture. Urine for cytology was negative for malignant cells. Ultrasonography of the kidney ureter bladder (KUB) suggested multiple calculi in right kidney with severe hydronephrosis and plain X-ray KUB showed similarly multiple stones scattered in right kidney **(Figure 1 A)**. Further workup was done with computed tomography intravenous urography (CT IVU) which showed right pyelolithiasis and nephrolithiasis with gross hydronephrosis and marked compromise in excretion of contrast agent with poorly enhancing interpolar parenchyma **(Figure 1 B)**. Left kidney had compensatory hypertrophy with 3.4x4.0x3.7cm heterogeneously enhancing, well defined hypodense mass suggesting renal cell carcinoma (RCC) **(Figure 1 C)**.



Kidney	Left	Right
Differential Function	90	10
GFR (ml/min)	49.2	5.3

Figure 2: DTPA Renogram

For further evaluation of hematuria, patient then underwent cystoscopy. Mild blood tinged urine jet was seen from the right ureteric orifice and thus impression was made about right kidney being the probable source of hematuria. No obvious bladder tumor was visualized. Since the bothering symptom was hematuria, patient opted for right simple nephrectomy first.

Right open simple nephrectomy was done through retroperitoneal approach. The right kidney specimen, after removal, was bivalved to realize unhealthy pelvic tissue along with multiple stones **(Figure 3)**.

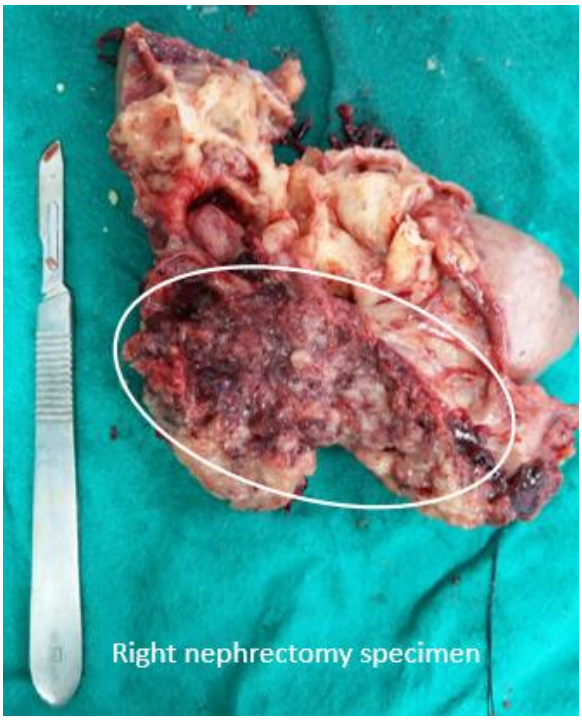


Figure 3: Right nephrectomy specimen

Histopathology examination confirmed high grade urothelial carcinoma about 9cm in size arising from the right renal pelvis with extension into the renal parenchyma and focal lymphovascular & perineural invasion (pT3aNx). Immunohistochemistry was positive for CK7, GATA3, p63, Vimentin and patchy positive for PAX-2, PAX-8 and CD10 with Ki-67 proliferative index of 40%. On first postoperative day, patient developed right upper monoparesis for which neurology team was consulted with the diagnosis of new onset right parietal lobe ischemia. Patient recovered gradually and was discharged on aspirin after 10 days of hospital stay. Patient was admitted again after 2 weeks for left open partial nephrectomy for RCC. During postoperative period, his creatinine level increased up to 1.9 mg/dL but declined gradually to baseline of 1.0 mg/dL after 1 week. The histopathology report of left renal mass revealed 3cm clear cell carcinoma, Fuhrman nuclear grade III (pT1aNx). Patient is currently in follow-up with medical oncology team for systemic adjuvant chemotherapy.

Discussion

The term "Multiple Primary Malignant Neoplasms" was proposed by Warren and Gastes in 1932 which has 3 criteria:

1. All of the tumors should be malignant
2. Every tumor should have its unique pathological feature
3. Possibility of metastasis and recurrence of each other should be ruled out

Thus far, about 50 cases of synchronous renal tumors have been reported in the literature.[2] Synchronous contralateral TCC of the renal pelvis and RCC rarely have been reported in the literature.[3] There are no readily

identifiable risk factors for the simultaneous occurrence of both tumors. The symptoms of the synchronous RCC and TCC are similar to the solitary RCC or TCC.[3] Dutta G et al have shown that the prognosis for a patient with dual malignancies is likely most influenced by the more aggressive of the two tumors.[4]

In our case, we suspected hematuria to be originating from the right kidney which had benign pathology and thus only simple nephrectomy was done. Only after histopathology report came out to be urothelial carcinoma, the malignant nature of renal pelvis was revealed and we realized that we had unknowingly done a simple nephrectomy for upper tract urothelial carcinoma (UTUC). That made us wonder about the possible spillage of tumor cells during simple nephrectomy, because the hydronephrosis was reduced intraoperatively to make the kidney easier to mobilize. With that in mind, it would be futile and unworthy to do a revision surgery for right ureterectomy and excision of bladder cuff.

In a patient having single kidney with RCC, active surveillance would be a risk, since the therapeutic window of partial nephrectomy might be lost if the tumor size increases. This was the rationale behind partial nephrectomy in our patient.

Another concern in our case is regarding postoperative follow-up. Which investigation modality would be appropriate for screening recurrence or metastasis? Would diagnostic ureteroscopy be feasible in the remnant right ureter? Usually in cases where the ureter is remaining (as in our case), it is difficult to image or approach it endoscopically.[5]

So far, because of the scarcity and heterogenicity of the case, no general guideline is available for the management. We should take the life quality and the patient's health status into consideration, when making the decision of surgical plan.[6]

Conclusion

Synchronous contralateral renal malignancy are very rare and unfortunate condition. Patient should be well counselled and educated to enhance their shared decision making skill. Managing such case is always challenging and must be individualized taking into account the concerning symptoms, co-morbidities and life quality.

Conflict of Interest

None

References

1. Ljungberg B, Bensalah K, Canfield S, Dabestani S, Hofmann F, Hora M, et al. EAU guidelines on renal cell carcinoma: 2014 update. European urology 2015;67:913-24.
2. Mucciardi G, Galì A, D'Amico C, Muscarà G, Barresi V, Magno C. Transitional cell carcinoma of the renal pelvis with synchronous ipsilateral papillary renal cell carcinoma: case report and review. Urology case reports 2015;3:93-5.
3. Leveridge M, Isotalo PA, Boag AH,

Kawakami J. Synchronous ipsilateral renal cell carcinoma and urothelial carcinoma of the renal pelvis. Canadian Urological Association Journal 2009;3:64-6.

4. Dutta G, Silver D, Oliff A, Harrison A. Synchronous renal malignancy presenting as recurrent urinary tract infections. Case reports in urology 2011;2011.
5. Rouprêt M, Babjuk M, Compérat E, Zigeuner R, Sylvester RJ, Burger M, et al. European Association of Urology Guidelines on Upper Urinary Tract Urothelial Carcinoma: 2017 Update. European urology 2018;73:111-22.
6. Xing QF, Wang Y, Sun G, Wang BS, Sha N, Li CY, et al. Case Report Synchronous contralateral renal cell carcinoma and urothelial carcinoma of the renal pelvis: a case report and literature review. Int J Clin Exp Pathol 2016;9:2492-5.