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Case Report

Synchronous contralateral renal cell carcinoma and urothelial carcinoma of the renal pelvis: a case report and literature review

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Abstract: Renal cell carcinoma (RCC) and urothelial carcinoma (UC) of the renal pelvis are not uncommon urological malignancies. However, simultaneous occurrence of RCC and UC in a patient is extraordinarily rare. We report a case of simultaneous contralateral renal cell carcinoma and urothelial carcinoma of the renal pelvis. The patient, a 72-year-old man, presented to our department with intermittent painless gross hematuria of 3 months duration. Radiologic examination revealed a solid mass in the right kidney and additionally another mass in the pelvis of the contralateral kidney with severe hydronephrosis. For the carcinoma of the pelvis, the patient chose radical nephroureterectomy with bladder cuff removal; for the renal cell carcinoma, the patient chose active surveillance. For follow-up during the surveillance period, we suggested computed tomography (CT) or magnetic resonance imaging every 3 months in the first year, every 6 months in the next 2 years and every year thereafter. After 2 years, the patient is in good health and disease-free under strict surveillance. We discuss this rare occurrence and our management approach.

Keywords: Renal cell carcinoma, urothelial carcinoma of the renal pelvis, treatment

Introduction

Renal cell carcinoma (RCC) and synchronous contralateral urothelial carcinoma (UC) of the renal pelvis is extremely rare. So far, because of the scarcity and heterogenicity of the case, no general guideline has been set. We should take the life quality and the patient's status into consideration, when we make the decision of surgical plan. We report a case of synchronous RCC and UC of the contralateral renal unit.

Case report

The patient, a 72-year-old man, presented to our department with intermittent painless gross hematuria of 3 months duration. His medical history included hypertension, diabetes and osteoporosis, with history of smoking. Physical examination was unremarkable.

Urine routines revealed microscopic hematuria. Urinary cytology was positive for malignant cells which were suspected to be transitional cell carcinoma. Ultrasonography suggested a solid mass with 22×23 mm diameters in the middle part of the right kidney and a 48×52 mm solid mass in the left renal pelvis. An enhanced abdominal computed tomography (CT) scan revealed enhancement of an expansive mass in the right kidney, measuring approximately 22×23×25 mm. We can discover a 55 mm solid mass in the collecting system of the left kidney. Renal vein and lymph nodes were normal. There was no evidence of metastasis (**Figure 1**). Computed tomography urography (CTU) demonstrated an irregular filling defect in the left renal pelvis (**Figure 2**).

Laparoscopic left nephroureterectomy were offered to the patient. We performed cystoscopy before the left nephroureterectomy. Cystoscopy revealed no pathological findings. By intraoperative observation the tumor was approximately 55 mm, and originated from the middle of the left renal pelvis. No gross invasion of the adjacent structures nor regional lymphadenopathy or venous thrombus was found during the operation. Microscopically, pelvic mass

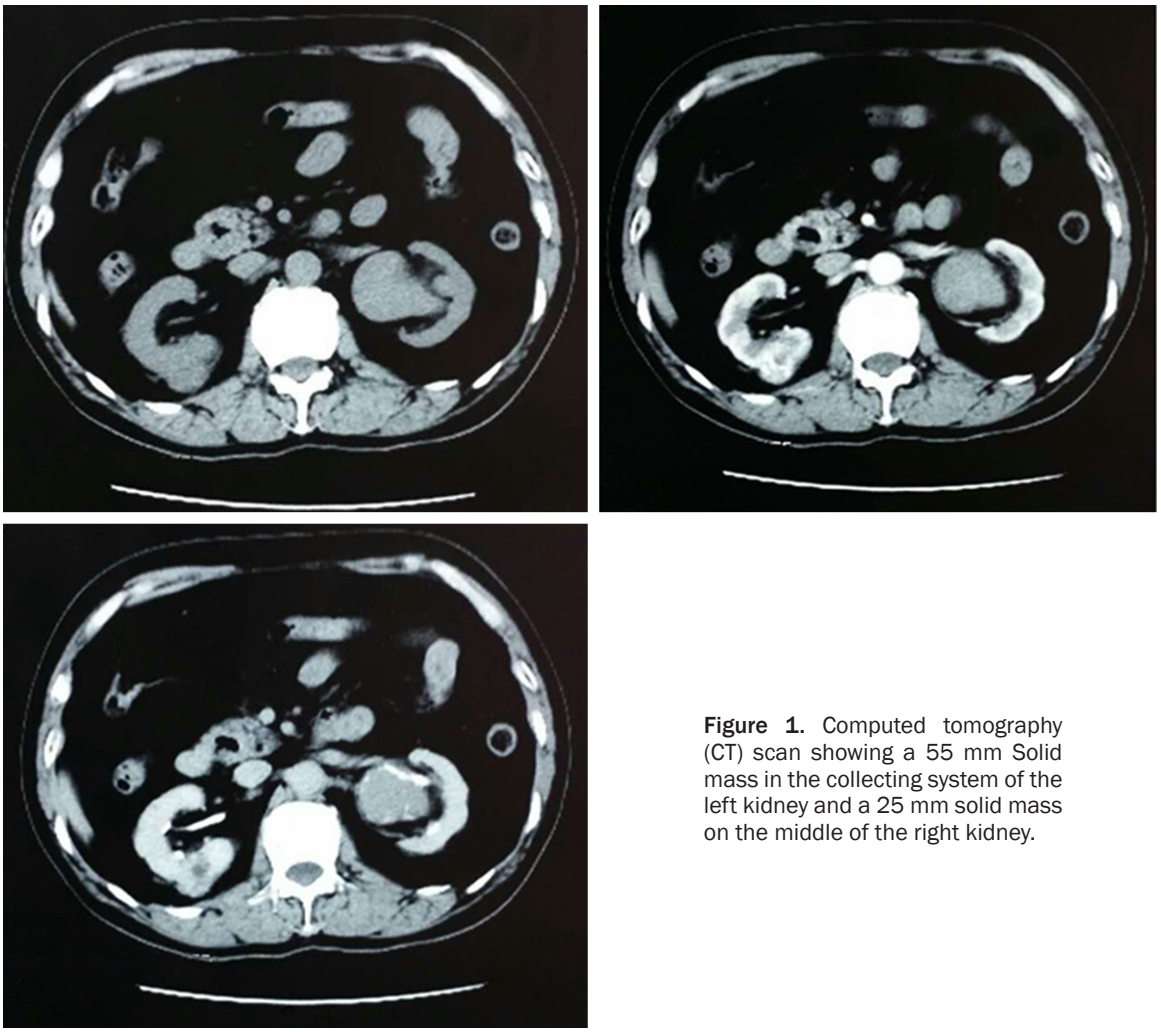

Figure 1. Computed tomography (CT) scan showing a 55 mm Solid mass in the collecting system of the left kidney and a 25 mm solid mass on the middle of the right kidney.

was detected as a noninvasive high-grade urothelial carcinoma (**Figure 3**). Surgical margins were negative for left ureter. Postoperative 5th day patient was discharged without any complication, and no problems occurred during follow-up period.

Discussion

RCC is the commonest solid lesion of the kidney and accounts for approximately 90% of all kidney malignancies [1]. Conversely, primary transitional cell carcinoma (TCC) of the renal pelvis or ureter is a relatively rare disease, and it accounts for less than 1% of genitourinary neoplasms and 5-7% of all urinary tract tumors [2]. Synchronous contralateral TCC of the renal pelvis and RCC rarely have been reported in the literature. RCC accompanied by TCC is multiple primary malignant neoplasms (MPMNS). According to the standard which was proposed by Warren and Gastes in 1932, we consider that MPMNS should meet the following requirements: the first, all of the tumors are malignant; the second, every tumor has its unique pathological feature; the third, we should rule out the possibility of metastasis and recurrence of each other.

RCC and TCC in this case were founded synchronously, so we can consider them as synchronous multiple primary malignant neoplasms (SMPMNS). Mike's review suggested that there were no readily identifiable risk factors for the simultaneous occurrence of both tumors [3]. The symptoms of the synchronous RCC and TCC are similar to the solitary RCC or TCC. The most common symptom was hematuria which was seen in 90% of the cases [3]. In this case, the patient presented to our department with intermittent painless gross hematuria of 3 months duration.

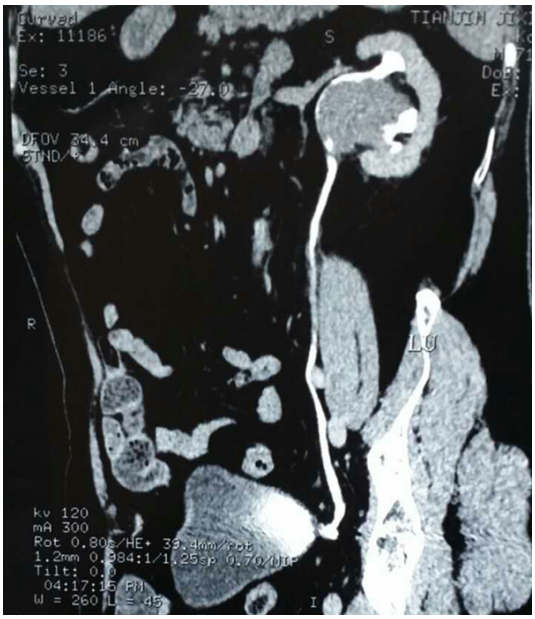

Figure 2. Computed Tomography Urography (CTU) demonstrated an irregular filling defect in the left renal pelvis.

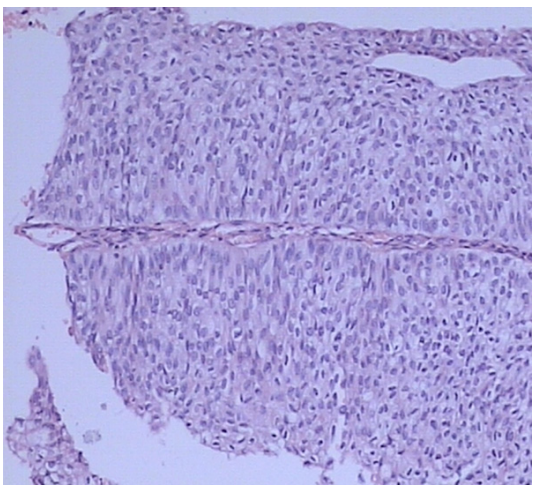

Figure 3. Noninvasive high-grade urothelial carcinoma (HE×200).

Hong searched the literature and found 7 cases which were tried to perform renal parenchymal-sparing surgery [4]. Although the partial nephrectomy has been the standard of managing small renal masses and the radical nephroureterectomy with bladder cuff removal has become the gold standard for the management of upper tract UC. Opinions vary on proper management of synchronous bilateral renal tumors of different histogenesis. We believe that management planning must be individualized, and the life quality of the patient should be considered. In our case, taking the patient's physical condition into consideration, we only propose the patient to select the radical nephroureterectomy with bladder cuff removal. As the rapid progress and poor prognosis of the carcinoma of pelvis, we performed the radical nephroureterectomy with bladder cuff removal for the left pelvis' cancer in the first place. Furthermore, synchronous or metachronous bladder TCC due to seeding of the tumor cells may occur approximately in 45% of upper urinary tract TCCs [5]. Therefore, cystoscopic evaluation of the bladder should be performed preoperatively.

The right kidney became isolated after the nephroureterectomy. We face a thorny question in how to deal with the right renal mass. Small renal masses (SRMs) are defied as enhancing tumors < 4 cm in diameter, with image characteristics consistent with stage T1aN0M0 renal cell carcinoma (RCC) [6, 7]. Most, but not all, SRMs are RCC. Most studies have reported that the rates of malignant pathology, higher grade and stage, growth and the risk of metastasis increase with tumor size [8]. The right renal mass was 22×23 mm diameters by ultrasonography.

The Chinese Consensus for the management of early stage T1a RCC states the following options: ① Partial nephrectomy is recommended by open, laparoscopic or robotic-assisted laparoscopic means. ② Laparoscopic radical nephrectomy is reserved for tumors not amenable to partial nephrectomy. ③ Probe ablation by radiofrequency or cryotherapy. A biopsy should be obtained before or at the time of ablation. ④ Active surveillance.

Partial nephrectomy can result in complications including bleeding, a need for transfusion, urinary fistula and acute changes in renal function. Complications of probe ablation are relatively uncommon, including transient pain, and damage to adjacent organs and the collecting system.

SRMs are frequent in the elderly and infirm, in whom the risk of treatment must be weighed against life expectancy and malignant potential of the tumor. Taking this reason into consideration, we suggested that the patient may select active surveillance. For follow-up during the surveillance period, we suggested computed tomography (CT) or magnetic resonance imaging every 3 months in the first year, every 6 months

in the next 2 years and every year thereafter. Prognostic factors for progression are poorly understood, but primary tumor growth rate is the most widely used trigger for delayed treatment [9].

Previous studies showed that 15-50% of patientsoperated for Upper urinary tract transitional cell carcinomas (UUT-TCC) have subsequent cancer development in the bladder [10-13]. Considering this high incidence of subsequent bladder cancer formation after the management of UUT-TCC, the patient should receive intravesical and chemotherapy. The patient's status would be one of the decisive factors in future therapeutic planning. So the patient only received intravesical epirubicin.

The prognosis for a patient with dual malignancies is likely most influenced by the more aggressive of the two tumors. According to imaging data and the possibility of UC seeding, the UC was likely the more ominous primary lesion in this patient. The patient had an uneventful in-hospital course, and was in good health and disease-free under strict surveillance for 2 years after surgery.

Conclusion

Synchronous RCC and TCC of the different kidney are a rare condition and there is no certain opinion about the treatment. Management planning must be individualized. Partial nephrectomy is recommended for SRMs and probe ablation is an alternative treatment. Active surveillance should be a primary consideration in the elderly and infirm.

Disclosure of conflict of interest

None.

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