

Simultaneous Occurrence of Chromophobe Renal Cell Carcinoma and Urothelial Carcinoma in the Same Kidney

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The simultaneous occurrence of a renal cell carcinoma and a urothelial carcinoma in the same kidney is uncommon. Here we report the case of a 79-year-old woman with ipsilateral synchronous renal cell carcinoma and urothelial carcinoma. She was referred to our hospital for gross hematuria and right flank pain. A computed tomography scan showed a 15x20 mm enhanced lesion on the upper calyx and a 12x15 mm mass on the lateral aspect of the right kidney. We thus suspected a renal pelvis tumor and performed right hand assisted laparoscopic nephroureterectomy with bladder cuff excision (HALSNU). Gross findings were multiple, pale yellowish papillary masses on the upper and lower major calices, of which the largest one measured 16x20 mm. A separated solid mass measuring 12x16 mm was also noted on the anterior midportion of the kidney. The former was a urothelial carcinoma and the latter was a chromophobe renal cell carcinoma. We present a rare case of a chromophobe renal cell carcinoma and a urothelial carcinoma in the same kidney. (**Korean J Urol** 2009;50:508-511)

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Renal cell carcinoma is the most common malignancy in the kidney. Renal cell carcinoma originates from the proximal convoluted tubule and is pathologically separated into clear cell, chromophilic, chromophobic, and collecting duct renal cell carcinomas. Urothelial carcinoma is the most common malignancy in the renal pelvis. Squamous cell carcinoma and adenocarcinoma are rarely found.

The simultaneous occurrence of a renal cell carcinoma and a urothelial carcinoma in the same kidney is very rare, and only 26 cases have been reported worldwide. Most of the cases of simultaneous occurrence involved tumors of a high grade and stage. The prognosis of such cases is poor. Our case was a high grade but low stage tumor. There was no recurrence at the 2-year follow-up.

CASE REPORT

A 79-year-old woman was referred with a right renal tumor as shown by computed tomography (CT) at another hospital.

Her chief complaint at presentation was painless gross hematuria with right flank pain. She had taken medicine for hypertension for 3 years. Her vital signs such as blood pressure, pulse rate, and body temperature were normal, and there were no abnormal findings in blood tests. Urine analysis showed microscopic hematuria and pyuria to some degree. The right renal tumor was suspected to be a urothelial carcinoma, so urine cytology was performed 2 times. One result had suspicious cancer cells; the other had no malignant cells. The CT scan showed a 15x20 mm contrast-enhanced tumor that was not clearly demarcated with renal parenchyma in the upper calyx of the right kidney and a 12-mm mass on the mid portion of the right kidney (Fig. 1). There were no abnormal findings in the lymphatics, ureter, or bladder. We thus suspected a renal pelvis tumor. Right hand assisted laparoscopic nephroureterectomy and bladder cuff excision (HALSNU) was performed.

A well circumscribed solid mass measuring 12x16 mm on the mid portion of the right kidney was noted. The tumor cells revealed a high nuclear grade (Fuhrman nuclear grade 4) of

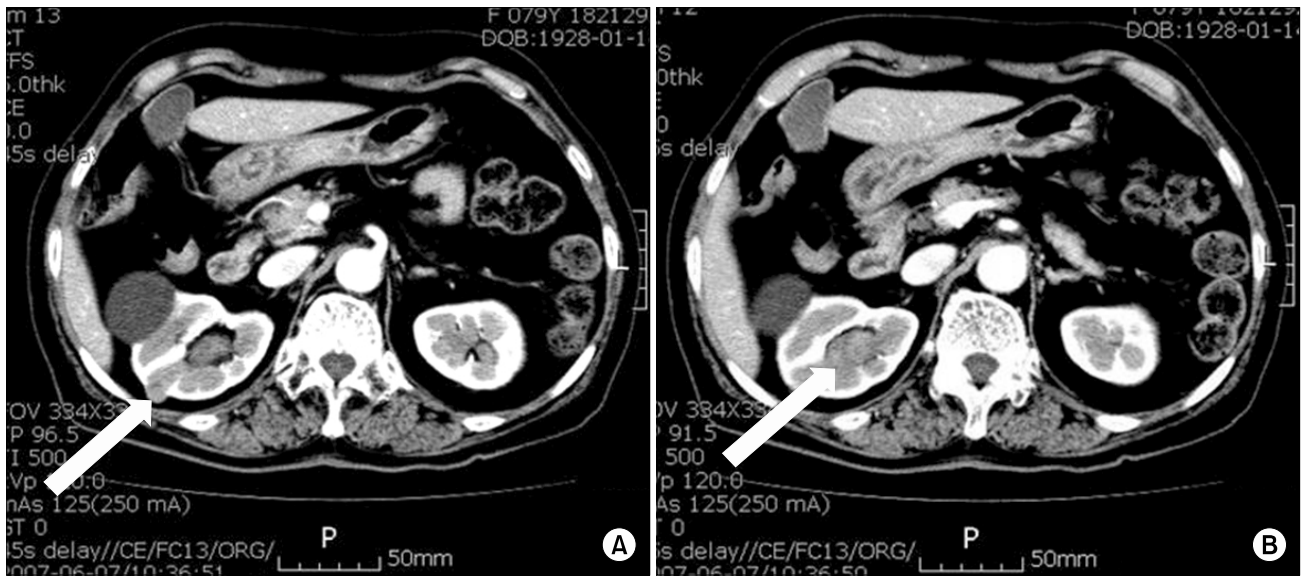


Fig. 1. Abdominal CT scan showed a 12 mm mass on the lateral aspect, chromophobe renal cell carcinoma, and 15x20 mm mildly enhancing mass (arrow), urothelial carcinoma, on the upper calyx of the right kidney (B).

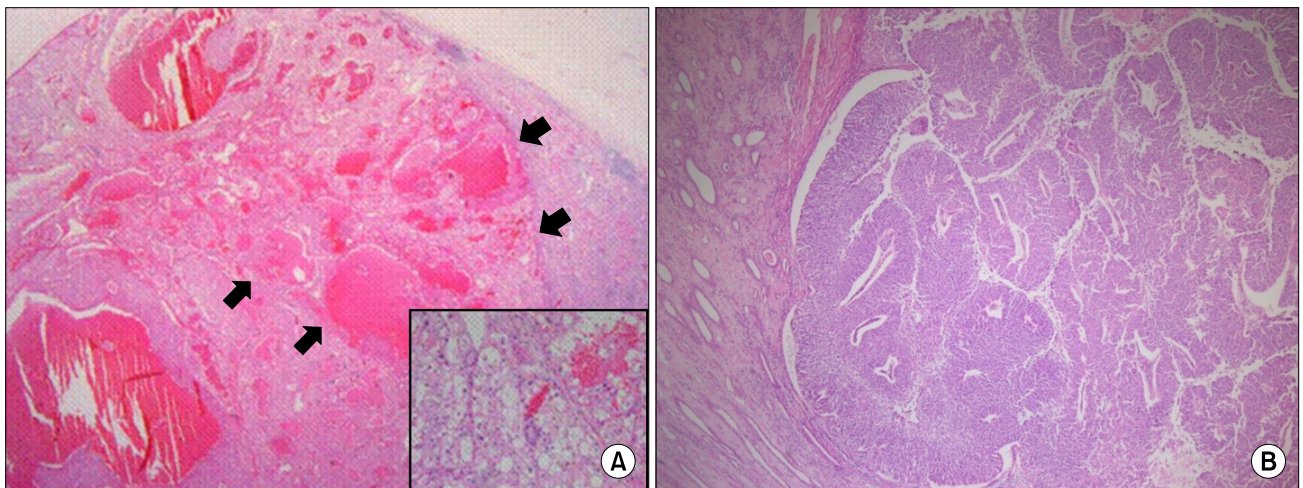


Fig. 2. (A) A well-circumscribed solid mass (arrow) measuring 16x12 mm on the mid portion of the right kidney is noted (H&E, x12.5) (Inset) The tumor cells revealed a high nuclear grade (Fuhrman nuclear grade 4) of chromophobe renal cell carcinoma (H&E, x200) (B) Multiple papillary urothelial carcinomas, high grade, are found on the upper and lower calyx, which were not invading the subepithelium (H&E, x40).

chromophobe renal cell carcinoma. Multiple papillary urothelial carcinoma of a high grade were found on the upper and lower calyx, which were not invading into the subepithelium (Fig. 2). There were no malignant cells in resected margins of the vessel and ureter. Pathologic stage was determined to be renal cell carcinoma pT1aN0M0 (Stage I) and renal pelvis urothelial carcinoma pTaN0M0 (Stage I).

The patient was observed for 24 months. We took a chest X-ray and cystoscopy every 3 months and a CT scan every 6

months. No findings were suspicious of recurrence.

DISCUSSION

Ipsilateral synchronous renal cell carcinoma and renal pelvis urothelial carcinoma were first reported in 1921 by Graves and Templeton. Since 1921, only 26 cases have been reported in the world, and only 1 case was reported to a journal of Korean medical science.¹ At the M.D Anderson medical center,

researchers pathologically reviewed 700 cases of renal surgery for 30 years but found only one case (0.14%) of a renal cell carcinoma and a urothelial carcinoma in the same kidney.²

A review of cases of ipsilateral synchronous renal cell carcinoma and urothelial carcinoma showed a median age of 65 years. Ninety percent of the patients complained of gross hematuria. The proportions of flank pain and of a palpable mass were 19% and 14%, respectively. The male-to-female ratio was 2:1, and the right-to-left ratio was 3:1. Twenty-four percent of cases had the metastatic lesion at diagnosis, and a concomitant bladder mass was detected in 34% of patients. Twenty-four percent of cases had a history of smoking.³

The mechanism of development of renal cell carcinoma and urothelial carcinoma at the same time in the same kidney is unknown. The relationship of development is also unknown.⁴ Patients who had renal cell carcinoma and renal pelvis urothelial carcinoma have a poor prognosis.⁵ Renal cell carcinoma makes up about 85% of primary renal tumors.⁶ About 20-30% of patients with renal cell carcinoma have distant metastasis at diagnosis. Although radical nephrectomy was done in patients whose renal tumors were confined to the kidney, 20-40% metastasized distantly.⁷ Chromophobe renal cell carcinoma is a relatively rare malignancy that constitutes 5% of renal cell carcinomas.⁸ Crotty et al⁸ reported 50 cases of chromophobe renal cell carcinoma. There was no definite difference of development according to sex, and the patients' median age was 59 years old. Chief complaints were incidentally detected (50%), flank pain (26%), hematuria (24%), and weight loss and palpable mass (10%). Chromophobe renal cell carcinoma is known to originate from the intercalated cells of the distal convoluted tubule. Patients with chromophobe renal cell carcinoma have a clinical course similar to that of clear cell renal cell carcinoma.⁹ In our case, a 12 mm renal tumor on the mid portion of the right kidney shown by CT scan seemed to be a benign renal mass because the enhancement was not enough to be a renal cell carcinoma. However, it was a chromophobe renal cell carcinoma.

Urothelial carcinomas of the renal pelvis make up 5-10% of all renal masses. Nephroureterectomy is the gold standard of treatment for renal pelvis urothelial carcinoma because the rate of recurrence of only radical nephrectomy in the ipsilateral ureter is 84%.³ When preoperative radiologic findings are not suitable to conventional renal cell carcinoma, evaluation to detect urothelial carcinoma (e.g., urine cytology, NMP22) is

needed. In the present case, there were 2 major clues that led us to suspect a renal pelvis urothelial carcinoma. First, the preoperative CT scan showed a 15x20 mm mass on the upper calyx of the right kidney. Second, suspicious malignant cells in urine cytology suggested urothelial carcinoma of the renal pelvis. We thus performed HALSNU.

Postoperative evaluation is different for renal cell carcinoma and urothelial carcinoma. For urothelial carcinoma, periodic cystoscopy is needed. For renal cell carcinoma, routine renal function evaluation and physical examination is needed in T1 RCC. In T2 RCC, annual history taking, physical examination, blood tests, chest X-ray, and abdominal CT scan every 2 years are needed. Patients with stage T3 N0 M0 tumors have a higher risk for development of recurrent malignant disease, particularly during the first 3 years after radical nephrectomy, and may benefit from more frequent laboratory and radiographic follow-up.¹⁰ There is no standard management protocol for synchronous renal cell carcinoma and renal pelvis urothelial carcinoma. In this case, the patient had chest X-ray and cystoscopy every 3 months and a CT scan every 6 months for 2 years, and we have not detected any findings of recurrence.

The simultaneous occurrence of renal cell carcinoma and renal pelvis urothelial carcinoma is very rare and has a poor clinical course when of a high grade and stage. Concomitance of renal pelvis urothelial carcinoma is a major factor that directs the method of surgical management. Enough evaluation for urothelial carcinoma is needed. If urothelial carcinoma is not ruled out, nephroureterectomy with bladder cuff excision should be done. Periodic cystoscopy for urothelial carcinoma and chest X-ray and abdominal CT scan for renal cell carcinoma should be done postoperatively.

REFERENCES

1. Lee JW, Kim MJ, Song JH, Kim JH, Kim JM. Ipsilateral synchronous renal cell carcinoma and transitional cell carcinoma. *J Korean Med Sci* 1994;9:466-70
2. Anseline P, Howarth VS. A case of transitional cell carcinoma of the renal pelvis, clear cell renal carcinoma, and analgesic nephropathy. *Aust N Z J Surg* 1977;47:521-3
3. Michel K, Belldegrun A. Synchronous RCC and TCC of the kidney in a patient with multiple recurrent bladder tumors. *Rev Urol* 1999;1:99-103
4. Terada T, Inatsuchi H, Yasuda M, Osamura Y. A kidney carcinoma with features of clear cell renal carcinoma and transitional cell carcinoma: a combined renal cell and transi-

- tional cell carcinoma? *Virchows Arch* 2003;443:583-5
5. Hart AP, Brown R, Lechago J, Truong LD. Collision of transitional cell carcinoma and renal cell carcinoma. An immunohistochemical study and review of the literature. *Cancer* 1994;73:154-9
 6. Boring CC, Squires TS, Tong T, Montgomery S. Cancer statistics, 1994. *CA Cancer J Clin* 1994;44:7-26
 7. Janzen NK, Kim HL, Figlin RA, Beldegrun AS. Surveillance after radical or partial nephrectomy for localized renal cell carcinoma and management of recurrent disease. *Urol Clin North Am* 2003;30:843-52
 8. Crotty TB, Farrow GM, Lieber MM. Chromophobe cell renal carcinoma: clinicopathological features of 50 cases. *J Urol* 1995;154:964-7
 9. Han CH, Choi YJ, Sung SY, Kang SH, Yoon JY, Hwang TK, et al. Chromophobe cell renal carcinoma: a report of four cases with DNA ploidy and ultrastructural study. *Korean J Urol* 1998;39:91-6
 10. Steven CC, Andrew CN, Ronald MB. Renal tumors. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, editors. *Campbell-Walsh urology*. 9th ed. Philadelphia: Saunders; 2007;1567-637
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