

Squamous cell carcinoma must be considered in patients with long standing upper ureteral stone and pyonephrosis

Byeong kuk Ham · Jin wook Kim · Jong hyun Yoon ·
Mimi Oh · Jae hyun Bae · Hong suk Park ·
Du geon Moon

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A 69-year-old male patient with chronic alcoholism presented with a history of swelling and pain of right upper abdomen for the recent 6 months. He complained of generalized weakness and weight loss in the past 3 months. There was no history of fever and hematuria but he had occasional right flank pain. Physical examination revealed moderate right costovertebral angle tenderness and right palpable abdominal mass. Routine hematology, biochemical tests and chest radiograph were normal. Urinalysis revealed microscopic hematuria and pyuria. Urine cytology was negative for malignancy. Ultrasonography of the abdomen showed severe hydronephrosis of the right kidney with hydronephrotic sac suggestive of pyonephrosis and dilatation of the right ureter. The left kidney was normal in size, shape and echogenicity. Computed tomography (CT) of abdomino-pelvis showed severe hydronephrosis filling the right abdominal cavity, thin parenchyma of the right kidney suggestive of non-functioning kidney, several calyceal stones (<10 mm) and one stone (22 mm) in the upper ureter. There was no ascites or lymphadenopathy (Fig. 1).

The patient was scheduled for a right nephrectomy through a flank incision. On operation, a huge kidney measuring $27 \times 20 \times 15$ cm was obtained. The whole kidney with pyonephrosis was a distended sac-like structure without any visible renal tissue. The cut surface showed multiple areas with necrotic tissue and multiple calculi (Fig. 2).

The final pathology report showed invasive, poorly differentiated squamous cell carcinoma ($5 \times 2, 5 \times 2$ cm), several renal stones and a stone in the right upper ureter. The tumor extended to perinephric fat and all surgical margins were negative. There was no regional lymphatic invasion of the tumor and no distant metastasis (pathological stage T3N0M0) (Fig. 3). The patient had an uneventful postoperative course and was discharged on postoperative day 7 in stable condition.

At 5-months follow-up visit after the surgery, he presented with pain of right shoulder and generalized weakness. Follow-up CT scan showed multiple metastases in the liver and spleen and metastatic lymphadenopathy in the aortocaval and retrocaval spaces. This pathology was not visible on the previous CT scan (Fig. 4). The patient received one course of chemotherapy but he expired 7 months after surgery.

Primary malignant tumors of the renal pelvis are relatively rare and constitute approximately 8–14% of all the renal malignancies [1]. Of these, squamous cell carcinoma of the renal collecting system is rare, accounting for about 0.5–8% of the renal pelvic tumors [2, 3]. This rare malignancy is frequently associated with chronic pyelonephritis and renal stone formation. Other etiologic factors such as tuberculosis, immunosuppression with azathioprine, analgesic abuse with phenacetin, radiation therapy, chronic rejection in a transplant kidney and prior percutaneous nephrolithotomy have been associated with squamous cell carcinoma [4–7]. It is believed that chronic irritation leads to squamous metaplasia which may subsequently develop into squamous cell carcinoma [8]. Squamous cell carcinoma of the renal pelvis usually occurs in old people (50–70 years). Clinical presentation is similar to that of urothelial carcinoma, and a patient with this malignancy might present with flank or abdominal pain, microscopic or gross hematuria, fever, anorexia or cachexia, and a palpable

B. k. Ham · J. w. Kim · J. h. Yoon · M. Oh ·
J. h. Bae · H. s. Park · D. g. Moon (✉)
Department of Urology, Korea University Institute
for Regenerative Medicine, Korea University
College of Medicine, 80, Guro-dong, Guro-gu,
Seoul 152-703, Korea
e-mail: dgmoon@korea.ac.kr

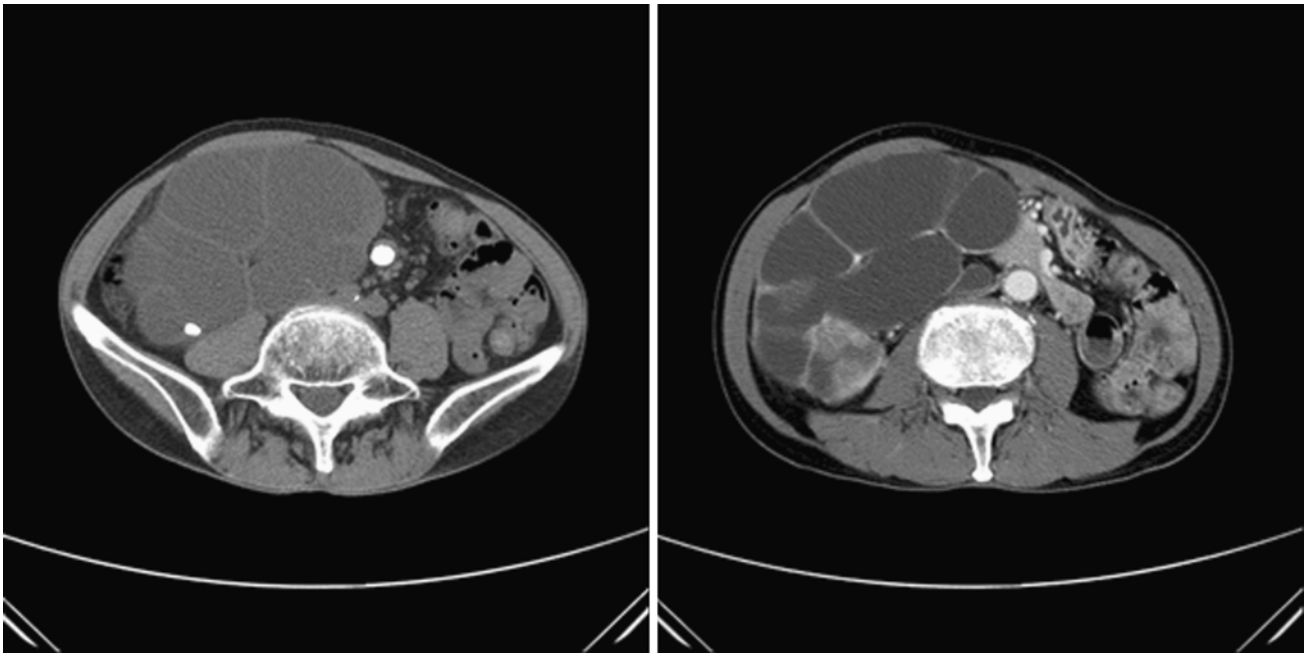


Fig. 1 Preoperative CT scan showed severe hydronephrosis, thin parenchyma of the right kidney, several calyceal stones (<10 mm) and a right upper ureteral stone (22 mm)

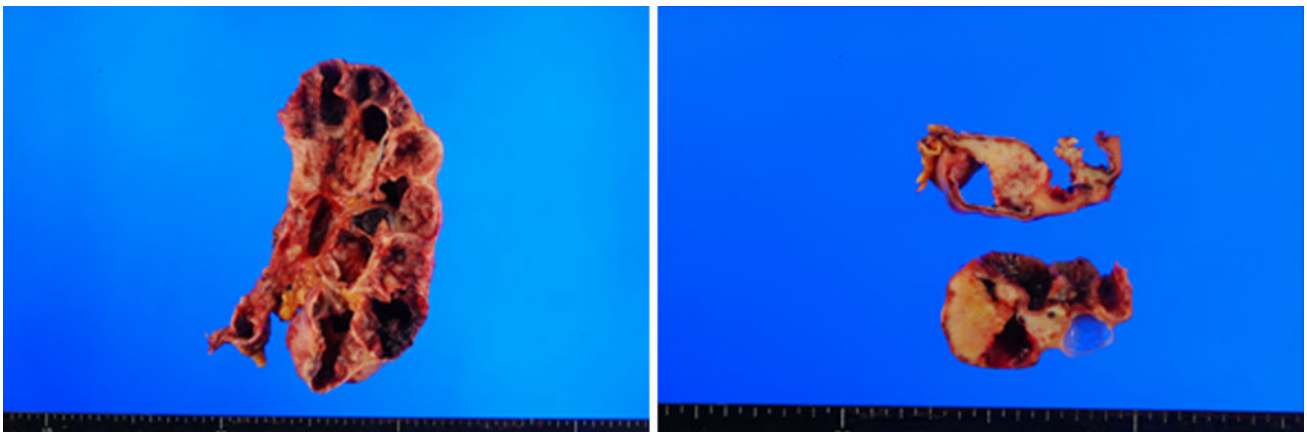


Fig. 2 Macroscopic appearance of the tumor

abdominal mass [9]. However, it may alternatively be detected incidentally on radiographic examinations performed for other reasons. Paraneoplastic syndromes such as hypercalcemia have been reported in association with squamous cell carcinoma of the renal pelvis [10].

Macroscopically, squamous cell carcinoma of the renal pelvis is frequently bulky, necrotic and it invades the renal parenchyma and retroperitoneal soft tissue. Microscopically, it is similar to that found in other organs. Tumor cells have abundant eosinophilic cytoplasm and large pleomorphic nuclei with prominent nucleoli. Most squamous cell carcinoma of the renal pelvis is moderately to poorly differentiated [3].

The prognosis for squamous cell carcinoma of the renal pelvis is similar to that of transition cell carcinoma. However, these malignancies usually present with an invasive and advanced stage. Nephrectomy or nephroureterectomy is rarely curative and the tumor neither responds to adjuvant chemotherapy nor radiation. Most patients survive less than 1 year after surgery with a 5-year survival of less than 10% [8, 11].

As mentioned earlier, squamous cell carcinoma of the renal pelvis is frequently associated with long-standing pyelonephritis and stone of urinary tract.

In this case, we could not detect squamous cell carcinoma of the renal pelvis by imaging techniques before

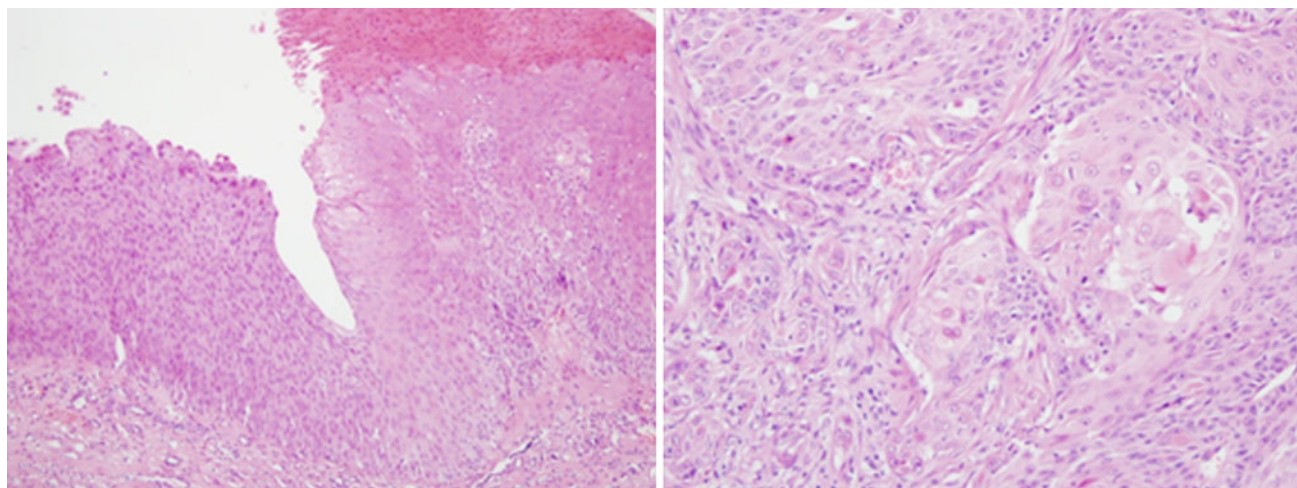


Fig. 3 Macroscopic appearance of squamous cell carcinoma of the renal pelvis

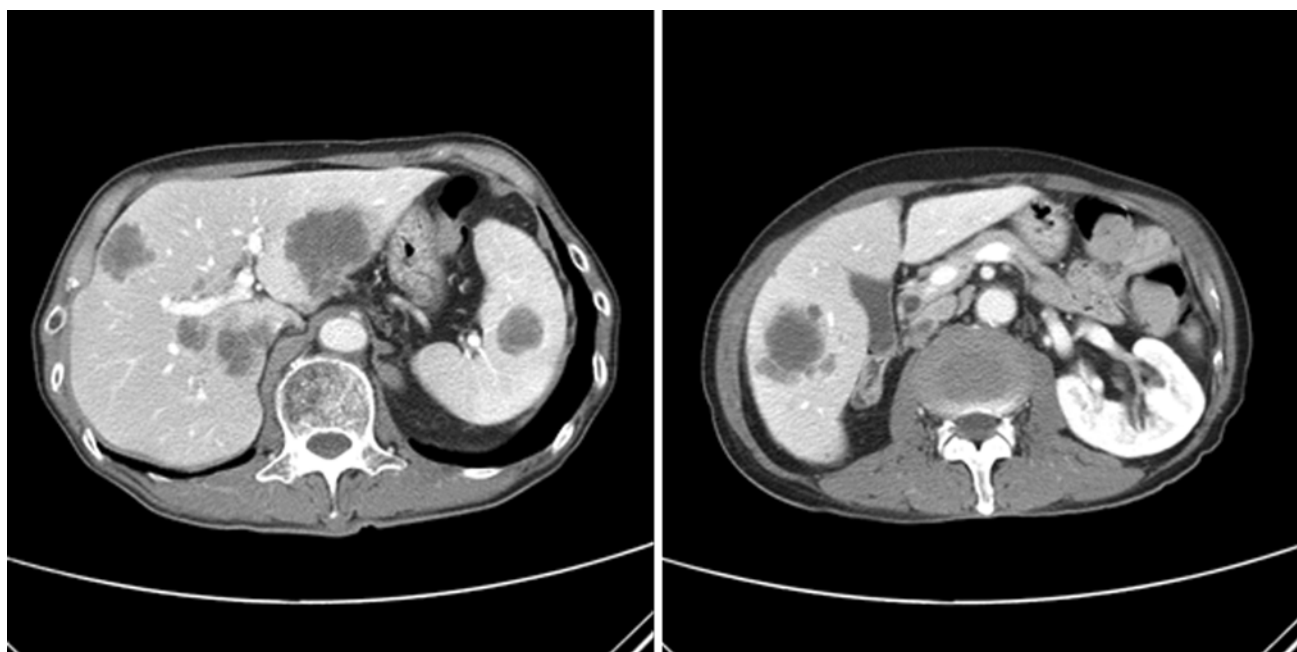


Fig. 4 Postoperative 5 months follow-up CT scan showed multiple metastases in the liver and spleen and metastatic lymphadenopathy in aortocaval and retrocaval space

surgery and the diagnosis of squamous cell carcinoma of the renal pelvis was established postoperatively.

Although squamous cell carcinoma of the renal pelvis is rare, it should be considered in patients with long standing upper ureteral stone and pyonephrosis.

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