

Renal Calculus Complicated with Squamous Cell Carcinoma of Renal Pelvic: Report of Two Cases

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Abstract

Squamous cell carcinoma (SCC) of the renal pelvis is an uncommon tumor, which is usually associated with infection and long standing renal calculus. The neoplasm is highly aggressive, so it is at advanced stage and has a poor outcome when diagnosed. We present two cases who had diseases of kidney stone complicated with mass of renal pelvis. Both patients were operated with radical nephrectomy subsequently. The histopathology report showed that the tumors of renal pelvis were SCC. When come across a case of chronic renal calculi, we should pay attention to whether it exists neoplasm because the co-existing latent mass may bring about misdiagnosing and effect the patient's treatment plan and prognosis.

Keywords: Renal calculus; Squamous cell carcinoma; Renal pelvis

Background

Primary renal squamous cell carcinoma (SCC) is an uncommon tumor with a relatively low incidence. It constitutes less than 1% of all urinary tract neoplasms [1]. It is reported that renal SCC is more often occurs in the male urethra and urinary bladder than in the renal pelvis. The neoplasm is highly aggressive, so it is at advanced stage and has a poor outcome when diagnosed [2]. Herein we present two cases incidentally detected squamous cell carcinomas of renal pelvis that have histories of kidney stone with hydronephrosis.

Case Reports

Case 1

A 55-year-old female patient went to our department with dull pain at the bilateral lumbar regions for 1 month, especially the right side. She underwent twice ureterolithotomy for both sides. On the right loin we could see a lump which was ballotable. Her urine examination showed hematuria (occult blood 3+) and infection (white blood cell 2+), while the urine culture was sterile. The blood urea was 8.15 mmol/L and serum creatine was 101 μ mol/L. The total glomerular filtration rate (GFR) was 77.22 ml/min with 25% on the right kidney and 75% on the left. The X-ray revealed multiple small calculus in the both sides. Using ultrasound inspection we found both renal hydronephrosis with calculi, a mass in the right kidney and retroperitoneal lymph nodes enlargement. Therefore the patient was arranged with Computed tomography (CT). CT showed a tumor in the right renal pelvis and both renal hydronephrosis with calculi, especially the right (Figure 1a). The patient was operated with radical nephrectomy. The histopathology report showed a wide range of tissue necrosis and a well-differentiated squamous cell carcinoma, infiltrating the renal parenchyma, but no lymph nodes metastasis (Figure 1b). Thus the stage was Stage III (T3N0M0). The case

recovered quickly; however, she died from metastatic tumors 1 year after surgery.

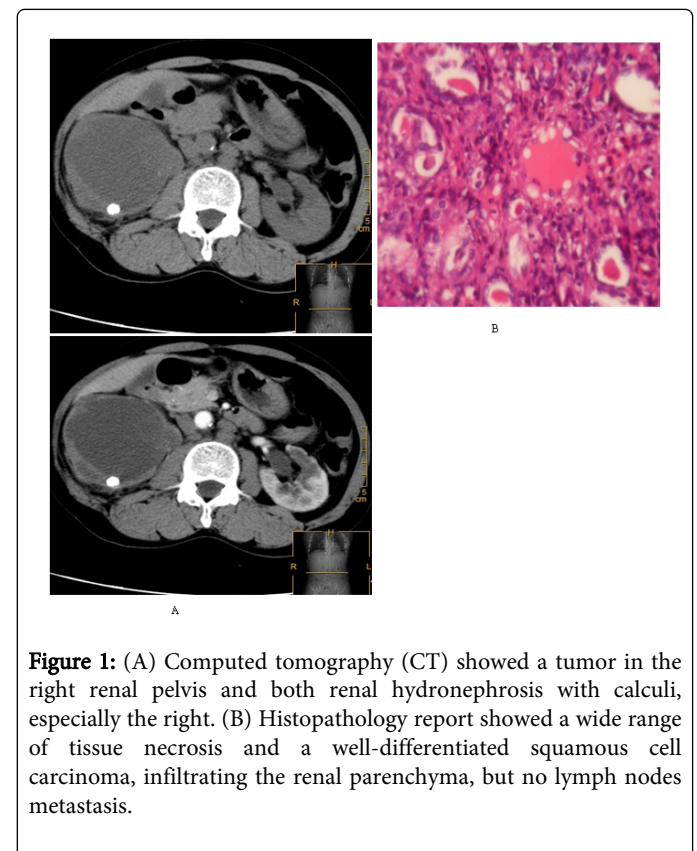


Figure 1: (A) Computed tomography (CT) showed a tumor in the right renal pelvis and both renal hydronephrosis with calculi, especially the right. (B) Histopathology report showed a wide range of tissue necrosis and a well-differentiated squamous cell carcinoma, infiltrating the renal parenchyma, but no lymph nodes metastasis.

Case 2

A 61-year-old male presented with complaints of bilateral flank pain, especially the right side since the last 3 months. He had a history

of bilateral kidney stone for 5 years. The urine exam showed hematuria (occult blood 2+) and infection (white blood cell 2+) nevertheless, there were no bacteria in the urine culture. The blood urea and serum creatine were 12.15 mmol/L and 301 μ mol/L. The total GFR was 48.88. mL/min with GFR of the right kidney being 3.09. mL/min and of left being 45.79. mL/min. The X-ray and ultrasound revealed both renal hydronephrosis with calculi. The result of CT told us not only bilateral renal hydronephrosis with stone, but also a neoplasm in the right renal pelvis (Figure 2a) (no contrast results in CT because of his high serum creatine). In the same way, the patient was subsequently operated with radical nephrectomy. Histopathology result was well-differentiated SCC, infiltration into the renal parenchyma, but no lymph nodes metastasis (Figure 2b). The tumor was hence of stage III (T3N0M0). 3 months later, the patient underwent cisplatin-based chemotherapy. However, he died from the complications of chemotherapy 2 months later.

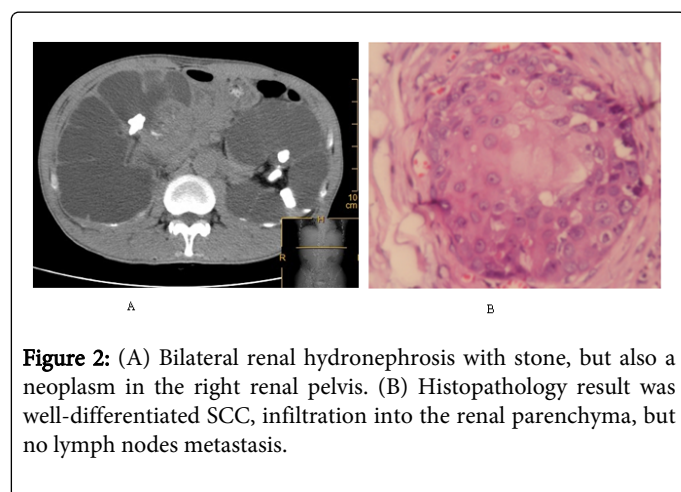


Figure 2: (A) Bilateral renal hydronephrosis with stone, but also a neoplasm in the right renal pelvis. (B) Histopathology result was well-differentiated SCC, infiltration into the renal parenchyma, but no lymph nodes metastasis.

Discussion

Pure SCC of the renal collecting system is rare, and only a few cases have been reported up to now. The SCC of renal pelvis is closely relevant to kidney stone or infection. Recently a population-based study also found the association between urinary calculi and renal pelvis cancers [3]. Some scholars have speculated the mechanisms: inflammatory cells and lymphocytes could be caused by the irrigation of calculus and infection at the damage site, and a plentiful of cytokines and chemokines would be secreted by the lymphocytes, which promote the growth of tumor cells and contribute to the onset and progression of cancer [4]. The presence of the renal calculi contributes the appearance of squamous metaplasia.

Clinically, presenting symptoms contain hematuria, loin pain, abdominal lump and so on. Both two cases had flank pain and microscopic hematuria. It is difficult to differentiate between the SCC and renal stone just from the symptoms because their symptoms are similar. So the diagnosis is mainly rely on the laboratory tests and imaging examinations including ultrasound, intravenous urography (IVU), CT, urinary cytology, histopathology, etc. While when the tumor is complicated with kidney calculus, the diagnostic rate of these examinations visible goes down. In our study, the ultrasound of two cases didn't find the neoplasms. A retrospective review of radiological findings in renal SCC revealed IVU was nonspecific [5], moreover,

IVU may also cause infection, while, CT is noninvasive and can provide helpful information regarding the anatomical extent of the tumor [6]. Therefore, both two cases perform CT instead of IVU. At last, the defined diagnosis depends on histopathology.

Plentiful treatment methods have been tried in patients who suffer from renal SCC. The treatment approaches should be selected on the basis of age, the patient's general condition, grading and staging of the cancer and patient compliance and so on. Among these choices, radical nephrectomy with total ureterectomy including a bladder cuff around the ureteral orifice is the primary way to treat renal SCC so far [7]. Some authors suggested radical nephrectomy and only partial ureterectomy [8]. When the cancer occurs distant metastasis, surgery is not necessary. Radiotherapy, chemotherapy or immunotherapy could be adopted but the effect is limited and has shown no survival benefit [9], which highlights the necessity of early diagnosis. The prognosis of renal SCC is so poor that the 5-year's survival rate is no more than 10% and most patients die within one year after surgery [10].

Conclusion

Primary renal SCCs are relatively uncommon neoplasms, which show a closely connection with renal calculus. When complicated with kidney stones, renal SCCs are difficulty diagnosed. CT and histopathology play vital role in diagnosis and staging of renal SCCs. The treatments include surgery, radiotherapy, chemotherapy and immunotherapy. The prognosis of renal SCC is relatively poor.

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