Case Report

J Chin Med Assoc
2004;67:308-310

Seeding of Malignant Renal Tumor Through a Nephrostomy Tract

Shian-Shiang Wang
Hao-Chung Ho
Chung-Kwang Su
Wen-Ming Chen
Chen-Li Cheng
Chi-Rei Yang

Division of Urology, Department of Surgery, Taichung Veterans General Hospital, Taichung, Taiwan, R.O.C.

We present 2 patients who suffered from obstructive uropathy and received percutaneous nephrostomy diversion. After a series of studies, the diagnoses were transitional cell carcinoma and squamous cell carcinoma, respectively. Unfortunately, tumor seeding through a percutaneous nephrostomy tract developed after radical operation. Wide excision of recurrent tumors was performed and no local recurrence could be found after a follow-up more than 1 year later. Malignancy seeding through the percutaneous nephrostomy tract should always be kept in mind when we deal with patients of obstructive uropathy caused by suspected malignancy.

Key Words
percutaneous nephrostomy;
squamous cell carcinoma;
transitional cell carcinoma

Percutaneous nephrostomy (PCN) tube insertion is a common procedure in the treatment of obstructive uropathy. Tumor seeding through the PCN track is a theoretical risk for percutaneous management of upper urinary tract tumor. However, transitional cell carcinoma (TCC) and squamous cell carcinoma (SCC) growing along an indwelling percutaneous nephrostomy tract is rare in the literature.[1-4] Herein we report 2 patients with obstructive uropathy who, having received PCN diversion, developed cancer seeding along the nephrostomy tract.

CASE REPORT

Case 1

A 63-year-old female had a history of uremia and received renal transplant in Mainland China 2 years previous to admission. She suffered from painless gross hematuria 2 months before admission, and TCC of bladder was diagnosed by cystoscopy. Transurethral resection of bladder tumor was performed and a tumor implanted around the right ureteral orifice was noted. A ureteroscopic examination was carried out for right hydronephrosis noted by abdominal computed tomography (CT) scan. The tumor occupied the lower ureter and the ureteroscope could not be passed through. Fever and right flank pain occurred after the operation and right PCN was indwelling for 1 week till the symptom subsided. She later received a radical cystectomy and bilateral nephroureterectomy. The pathlogy revealed TCC, grade 3 with sarcomatoid transformation of bladder, T3N0M0; right renal pelvis and ureter, T2N0M0 and left ureter, T3N0M0. Adjuvant chemotherapy with methotrexate (MTX), epirubicin and carboplatine was performed 3 times. A right flank mass just underneath the previous PCN wound was palpable 3 months after the radical surgery and the tumor became larger despite the adjuvant chemotherpy. Abdominal CT revealed a dumbell shaped tumor mass about 3 × 3 cm over the right posterior abdominal wall (Fig. 1). A wide excision of the tumor was carried out. The pathology report disclosed metastatic TCC, grade 3. No

Received: June 26, 2003.
Accepted: December 24, 2003.

Correspondence to: Hao-Chung Ho, MD, Division of Urology, Department of Surgery, Taichung Veterans General Hospital, 160, Sec. 3, Taichung-Kang Road, Taichung 407, Taiwan.
Tel: +886-4-2359-2525; Fax: +886-4-2359-3160; E-mail: sswdoc @ ms68.hinet.net

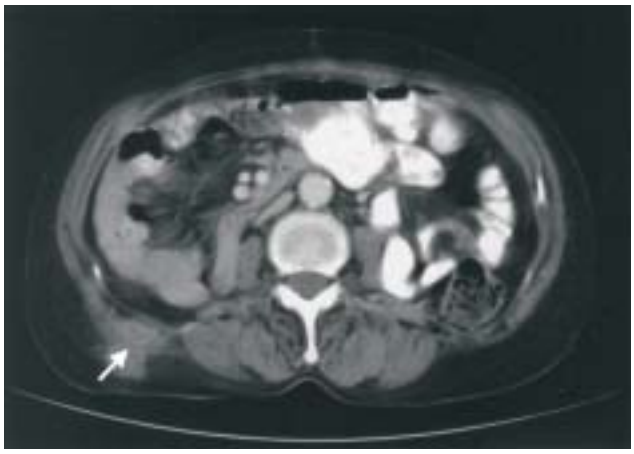

Fig. 1. Case 1. A dumbell tumor (arrow) 3 × 3 cm over the right posterior abdominal wall just along the previous percutaneous nephrostomy tract developed 3 months later.

Fig. 2. Case 2. Preoperative computed tomography showed renal stone (S) and renal abscess (A) of the left kidney.

evidence of tumor recurrence could be detected 1 year postoperatively.

Case 2

A 52-year-old male suffered from intermittent fever for 2 months. A renal stone complicated with and abscess formation on the left kidney was noted by sonography and CT (Fig. 2). A PCN was inserted for abscess drainage, and percutaneous nephrolithotripsy (PCNL) was performed 10 days later. Biopsy for renal pelvis tissue during PCNL revealed malignant cells. Radical nephrectomy with lymph node dissection was carried out 3 weeks after the PCN tube was indwelling. In the left lower lung, a nodule was also noted by chest radiography and a lobectomy of the left lower lung was performed at the same time. The pathology disclosed an SCC, moderately to poorly differentiated in the renal pelvis. The tumor had invaded the perirenal fat and metastasized as an SCC of the lung. The patient received adjuvant chemotherapy with MTX, epirubicin and cisplatine for 3 times. The left flank mass with purulent discharge from a previous PCN tract was noted 3 months after nephrectomy. An abdominal CT showed a 6 × 5.5 cm soft tissue mass over the left lateral abdominal wall (Fig. 3). A wide excision of the tumor, including segmental resection of colon, was carried out for a tumor extending from the abdominal wall to the descending colon. No tumor recurrence could be traced in a follow-up after 19 months.

Fig. 3. Case 2. A 6 × 5.5 cm soft tissue mass (arrow) over the left lateral abdominal wall just along the previous percutaneous nephrostomy tract was noted 3 months later.

DISCUSSION

PCN is not an unusual procedure for the urologist to deal with obstructive uropathy caused by a stone, ureteral stricture or tumor. PCN had proven to be an effective and safe procedure for select patients with upper-tract TCC. Its most significant role was to provide relief of obstruction and enhanced diagnostic capabilities for those patients in whom standard techniques were inadequate.[5] The most common complication was blood loss requiring transfusion. More serious complications included persistent bleeding, progression to renal failure, hemothorax and peri-renal abscess.[6] Tumor

seeding through the PCN tract is rare in the literature. To our knowledge, only 3 patients with TCC and 1 patient with SCC of the cervix have been documented.[1-4]

Tumor seeding through the PCN tract is a potential risk for endoscopic management of urinary tract tumors. Several methods have been demonstrated to prevent that, for example, obtaining percutaneous access and performing tumor manipulation in a single stage, and using sterile water irrigation to lyse shed tumor cells osmotically.[2] Maintenance of a low intrarenal pelvic pressure during endoscopic surgery is also beneficial.[7] Furthermore, Woodhouse *et al*.[8] placed radioactive iridium wires into the nephrostomy tract after a percutaneous resection or cauterization of a renal pelvis TCC.

The reason for Case 1 to receive a PCN diversion was the evidence of hydronephrosis complicated with acute pyelonephritis. Case 2 received PCN due to a renal stone with abscess formation on the left kidney. An SCC in the renal pelvis was found incidentally during the PCNL. Because of persistent infection, the durations of PCN stents were 1 and 3 weeks for each of our patients respectively. No mass lesion over the abdominal wall could be found by the abdominal CT before radical nephrectomy. In these 2 patients, the abdominal wall mass was palpable just below the PCN track about 3 months after removal of the PCN tube. Therefore, it is most likely that the tumor metastasized through the PCN tract. However, no evidence of tumor recurrence could be detected in our follow-up after wide excision of the recurrent abdominal wall tumors.

In conclusion, in patients with high-grade TCC and SCC of renal pelvis, the possibility of tract metastases should be considered before PCN tube insertion. However, if PCN tube indwelling is unavoidable, wide excision of the PCN tract is suggested during the radical surgical intervention.

REFERENCES

1. Sharma NK, Nicol A, Powell CS. Track infiltration following percutaneous resection of renal pelvic transitional cell carcinoma. *Br J Urol* 1994;73:597-8.
2. Huang A, Low RK, deVere White R. Nephrostomy tract tumor seeding following percutaneous manipulation of a ureteral carcinoma. *J Urol* 1995;153:1041-2.
3. Sengupta S, Harewood L. Transitional cell carcinoma growing along an indwelling nephrostomy tube track. *Br J Urol* 1998;82:591.
4. Shin ES, Darcy MD, Mutch D. Metastatic seeding of a percutaneous nephrostomy tract causing cervical carcinoma. *AJR Am J Roentgenol* 2002;178:933-4.
5. Brian G, Margaret GZ, Steven BS. Role of percutaneous nephrostomy in patients with upper urinary tract transitional cell carcinoma. *Urology* 1991;37:331-6.
6. Thomas WJ, Phil MS, Gary HW, Arthur DS. Percutaneous management of transitional cell carcinoma of the renal collecting system: 9-year experience. *J Urol* 1995;154:1629-35.
7. Streem SB. Percutaneous management of upper-tract transitional cell carcinoma. *Urol Clin N Amer* 1995;22:221-9.
8. Woodhouse CR, Kellett MJ, Bloom HJ. Percutaneous renal surgery and local radiotherapy in the management of renal pelvis transitional cell carcinoma. *Br J Urol* 1986;58:245-9.