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Case Report

Seeding of a high-grade papillary urothelial carcinoma of the bladder along a nephroureterostomy tract

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ARTICLE INFO

Article history:

Received 29 March 2017

Received in revised form

20 May 2017

Accepted 20 May 2017

Available online xxx

Keywords:

Percutaneous nephrostomy (PCN)

High-grade papillary urothelial carcinoma (HG-PUC)

Obstructive uropathy

Bladder malignancy

ABSTRACT

Percutaneous nephrostomy placement is a common treatment for obstructive uropathy of various causes. Although rare in the literature, tumor seeding along the nephrostomy tract is a potential risk of percutaneous nephrostomy in the treatment of obstructive symptoms secondary to urothelial carcinoma. In this case report, we present one such unusual outcome where urinary bladder urothelial cancer cells metastasized to the paravertebral soft tissues through apparent seeding along a nephroureterostomy tract.

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Case presentation

A 63-year-old male former smoker presented to the emergency department (ED) with painless hematuria. Computed tomography urogram revealed 5 large bladder masses, the largest measuring 8.5 × 5.1 cm, as well as severe bilateral hydronephrosis (Fig. 1). Computed tomography chest revealed multiple lung nodules bilaterally, the largest measuring 0.3 cm in the right middle lobe. Transurethral resection was performed to debulk the bladder tumors. On histologic examination, high-grade papillary urothelial carcinoma was identified with focal superficial invasion of the lamina propria without invasion into the muscularis propria.

Lymphovascular invasion could not be appreciated and no additional associated epithelial lesions were identified. The patient was discharged with plans for repeat resection in 2 weeks; however, he was lost to follow-up.

Approximately, 5 months after discharge, the patient again presented to the ED with complaints of dysuria, hematuria, shortness of breath, global weakness, fatigue, and unintentional weight loss. The patient was admitted and a complete metabolic panel revealed acute renal failure (BUN of >186 mg/dL, creatinine of 21.2 mg/dL) and metabolic acidosis with an anion gap of 31.9 mmol/L. After being dialyzed and stabilized, the patient was transferred for bilateral nephrostomy placement to relieve the bilateral obstructive hydronephrosis. A left

Competing Interests: The authors have declared that no competing interests exist.

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<http://dx.doi.org/10.1016/j.radcr.2017.05.006>

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Fig. 1 – Enhanced-coronal CT shows multiple lobulated bladder wall masses (yellow arrows), with moderate obstructive hydronephrosis bilaterally (blue arrowheads).

percutaneous nephrostomy (PCN) was placed without incident; however, the contralateral placement was complicated by ureteropelvic junction injury, therefore requiring conversion to nephroureterostomy placement to traverse the injury.

During the course of his admission, the patient continued to have hematuria. His hemoglobin continued to drop and could not be stabilized. Three days after admission, the patient underwent cystoscopy with transurethral resection of the bladder, fulguration, and clot evacuation. On examination under anesthesia, the patient was noted to have a palpable mass throughout the bladder with 90% of the bladder lumen

filled with tumor. After resection, urology estimated that 80% of the tumor still remained and felt the patient likely had unresectable disease. Pathology determined the tumor morphology to be consistent with T2 high-grade papillary urothelial carcinoma with invasion into the muscularis propria with no lymphovascular invasion.

Neither cystectomy nor radiation were performed at this time because the patient wanted time to weigh his options and urology determined his nutritional status needed to improve before further intervention could be considered. Two weeks after admission, the patient was deemed medically stable and the patient was discharged and scheduled for outpatient dialysis.

Four months after discharge, the patient presented for nephrostomy and nephroureterostomy catheter exchange. A right paravertebral soft tissue mass (Fig. 2) was noted at this time and subsequently biopsied (Fig. 3). Cytologic evaluation revealed urothelial carcinoma with “strong morphological similarities” to his previously diagnosed tumor.

Four months after evaluation of the paravertebral soft tissue mass, the patient presented to the ED complaining of abdominal pain, diarrhea, and fevers indicative of spontaneous bacterial peritonitis. In addition to continued enlargement of the paravertebral mass (Fig. 4), there was development of new pulmonary and hepatic metastases. Unfortunately, the patient ultimately expired from refractory septic shock.

Discussion

In the United States, 69,000 patients are diagnosed with urinary bladder cancer (UBC) each year, and the disease has a national prevalence of 521,000 patients. These numbers have been improving in Western communities over the past several decades. The decrease in the burden of UBC in Europe and USA is largely attributed to the decline in smoking prevalence in these Western cultures [1]. Cigarette smoking is understood to be the

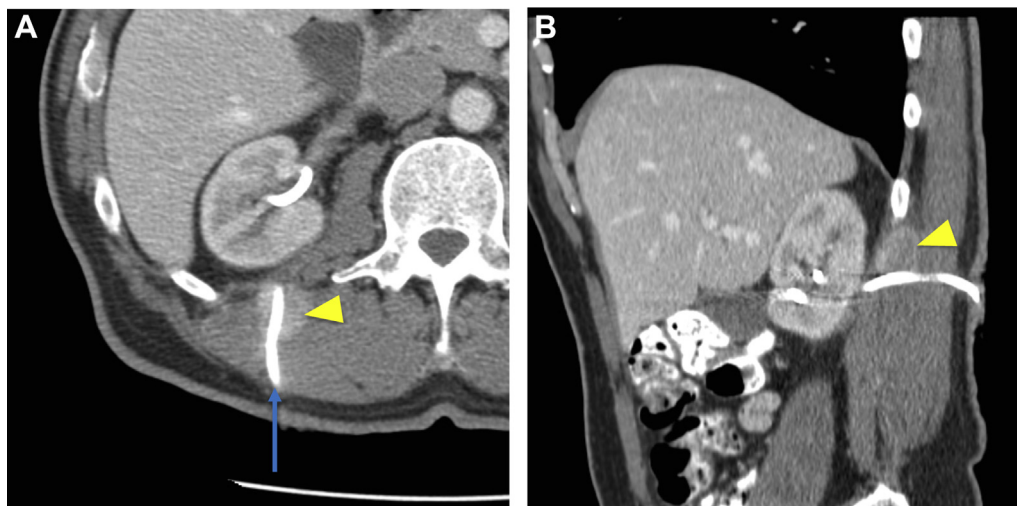


Fig. 2 – (A) Axial CT shows an enhancing 2 cm mass (yellow arrowhead) along the right percutaneous nephroureterostomy (blue arrow). (B) Sagittal reconstruction localizes the mass (yellow arrowhead) along the superior aspect of the percutaneous tract.

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