Metastatic seminoma to the ureter

Steven Kheyfets, MD, Waleed Eisa, MD, Heinric Williams, MD
Department of Urology, Geisinger Medical Center, Danville, Pennsylvania, USA

KHEYFETS S, EISA W, WILLIAMS H. Metastatic seminoma to the ureter. *Can J Urol* 2015;22(3):7827-7829.

We present a case report of testicular seminoma with intraluminal metastasis to the ureter causing obstruction and hydronephrosis. To our knowledge, this is the fourth case to be reported in the world literature of metastatic tumor to the ureter from a primary testicular seminoma.

Key Words: testicular, metastasis, seminoma

Introduction

Metastasis to the ureter is an uncommon occurrence. Stow described the first documented case in 1909 from a primary fibrolymphosarcoma of the thymus gland.[1] Approximately, only 410 such cases have been identified in the world literature with the most frequent primary tumor sites being stomach and breast.[2] We present the most recent case of primary testicular seminoma with metastatic ureteral spread in more than a 20 year span.

Case report

A 40-year-old male initially presented to our urology clinic with painless hematuria with an associated 42 pound weight loss. He had previously undergone a non-contrast CT scan at an outside hospital emergency department that revealed right hydronephrosis. An office cystoscopy and concomitant cytology proved unremarkable. A CT scan of the abdomen and pelvis with and without IV contrast was performed and revealed extensive retroperitoneal and pelvic adenopathy with an associated increase in density in the mid right ureter at the level of the iliac bifurcation causing moderate to severe right hydroureteronephrosis, Figure 1. He subsequently underwent cystoscopy, bilateral retrograde ureterpyelograms, distal right ureteroscopy (narrow ureter prevented further passage of the ureteroscope) in the operating room at that time. The right retrograde ureteropyelogram revealed a large mid-ureteral filling defect with associated moderate hydroureteronephrosis visualized proximal to the defect, Figure 2. A cytology sample obtained from the right distal ureter revealed an immunophenotype consistent with morphologic impression of a germ cell tumor, compatible with seminoma, Figure 3. A subsequent testicular ultrasound was performed and revealed two small left hypoechoic masses, each measuring about 1 cm. A probable small mass was appreciated on subsequent testicular exam. Subsequently, the patient underwent left radical inguinal orchiectomy and right ureteroscopy, at which time, a papillary midureteral mass about 4 cm in length was visualized and biopsied; a right ureteral stent was also placed during the same setting to relieve obstruction of the right kidney. Testicular pathology revealed two nodules (1.5 cm and 1.3 cm) of classic seminoma, and the pathology from the right ureteral mass revealed findings consistent with necrotic seminoma. The patient was referred to oncology and completed three cycles of bleomycin,

Accepted for publication April 2015

Address correspondence to Dr. Waleed Eisa, Department of Urology, Geisinger Medical Center, 100 N. Academy Avenue, Danville PA 17822 USA

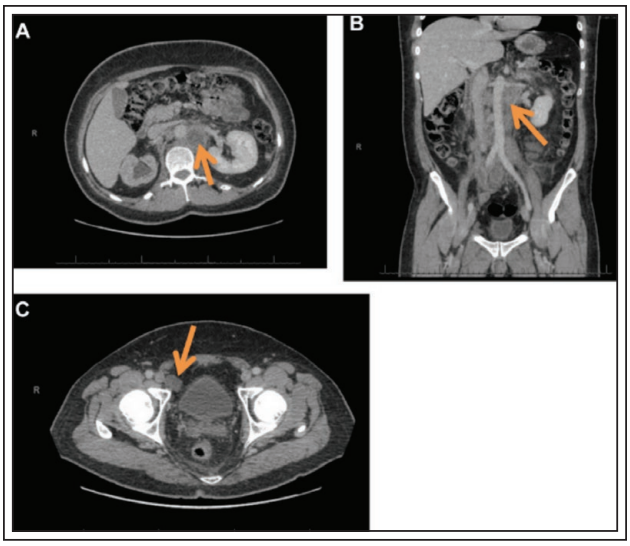

Figure 1. Pre-operative CT abdomen/pelvis with/without IV and with PO contrast: **A and B)** retroperitoneal adenopathy and **C)** pelvic adenopathy.

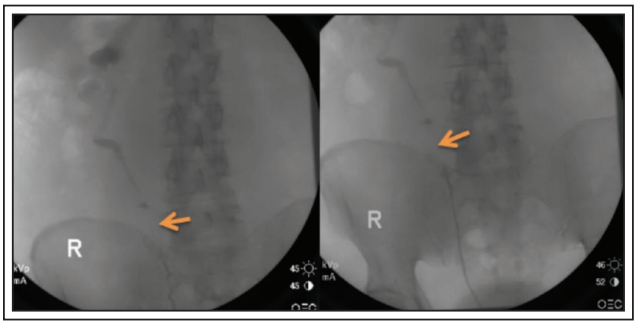

Figure 2. Pre-orchiectomy retrograde ureteropyelogram: right mid-ureteral filling defect with proximal hydronephrosis.

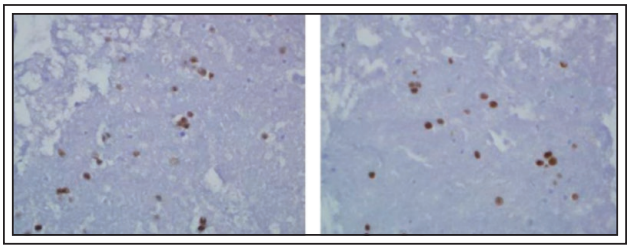

Figure 3. Immunocytochemical stains performed on the cell block sections revealed positive reactivity for SALL4 and OCT-4.

etoposide and cisplatin. A subsequent staging CT scan revealed marked but not complete reduction in retroperitoneal lymphadenopathy. A PET scan revealed persistent right hydronephrosis and two metabolically active sites suspicious for metastatic disease: a left retroperitoneal lymph node in the periaortic region as well as a small focus of intense activity in the left external iliac chain. The patient then received three cycles of second line chemotherapy with vinblastine, ifosfamide and cisplatin. His restaging CT scan of the abdomen and pelvis revealed stable retroperitoneal lesions, and with new hypo-enhancing right hepatic lesions. A PET scan followed and revealed new left retroperitoneal lymphadenopathy noted abutting the left common iliac vasculature at level of L5, ill-defined right hepatic lesions (2.5 cm x 2.2 cm) and resolution of right retroperitoneal lesions noted on prior study.

A CT-guided liver biopsy was pursued and proved consistent with metastatic seminoma. At this point, the patient was recommended treatment as per NCCN guidelines which included high dose chemotherapy with allogeneic transplant or a clinical trial. However, he declined referral to a tertiary care center and elected to proceed with a palliative chemotherapy regimen including gemcitabine and oxaliplatin. Patient received six cycles of gemcitabine and oxaliplatin. He was then started on six cycles of gemcitabine and taxotere with plans for repeat PET CT after completion of the third cycle. Meanwhile, the patient continued to undergo ureteral stent exchange every 3 months, and findings on cystoscopy, distal ureteroscopy and retrograde ureteropyelogram continued to show persistent stricture in the right distal ureter with a filling defect at the level of L4-S1, Figure 3.

Discussion

Metastatic disease to the ureter is a rarity with only approximately 410 cases reported in world literature.[2] Three mechanisms have been described to explain metastatic ureteral involvement. Type I involves periureteral adventitial layer infiltration with tumor cells resulting in compression of the ureteral wall. Type II includes a transmural portion of the ureteral wall with tumor cells evident in the muscular coat, perilymphatic or vascular layers. Type III involves tumor cells infiltrating the local mucosa of the ureter, with or without the muscularis layer, and submucosal nodules. Type I is thought to be most common while type II may manifest with ureteral stricture or obstruction, as seen in our case.[3-5]

Based on autopsy data, the incidence of ureteral metastasis is estimated to range from 0.3% to 8.3%.

Most of these tumors are asymptomatic. Symptomatic patients may present with back pain secondary to hydronephrosis (50%), urinary tract infection, proteinuria, hematuria (20% to 30%) and anuria with bilateral ureteral involvement.[6] Riche and associates reported breast and gastrointestinal as the most frequent primary tumors with metastatic spread to the ureters.[7]

Ureteral metastasis usually indicates advanced disease, and goals of care should be directed toward immediate relief of ureteral obstruction, preserving renal function and a multidisciplinary team approach. In our case, the patient was evaluated by oncology, received chemotherapy, and continued to undergo ureteral stent exchanges every 3 to 4 months. Only three reported cases of intraluminal ureteral metastasis, with testicular seminoma as the primary tumor, exist in world literature. In 1974, Cohen et al conducted a literature review of 111 cases of metastatic tumors to the ureter with testicular seminoma being the primary tumor in one case.[8] Johnson et al reported the second case in 1981 while Straub et al reported the third case in 2000.[9,10]

In conclusion, testicular tumors with metastasis to the ureter are extremely uncommon. One should consider ureteral metastasis in patients who present with ureteral obstruction and/or hydroureteronephrosis radiographically who already have an established diagnosis of a primary malignancy or in patients with symptoms suggestive an underlying malignancy. □

References

1. Stow B. Fibrolymphosarcomata of both ureters metastatic to a primary lymphosarcoma of the anterior mediastinum of thymus origin. *Ann Surg* 1909;50(5):901-906.
2. Kuo SM, Lin CM, Cha TL, Sun GH, Chang SY. Metastatic ureteral tumor from adenocarcinoma of colon. *J Med Sci* 2009;29(3):139-141.
3. Marincek B, Scheidegger JR, Studer UE, Kraft R. Metastatic disease of the ureter: patterns of tumor spread and radiologic findings. *Abdom Imaging* 1993;18(1):88-94.
4. Fitch WP, Robinson JR, Radwin HM. Metastatic carcinoma of the ureter. *Arch Surg* 1976;111(8):874-876.
5. Winalski CS, Lipman JC, Tumeh SS. Ureteral neoplasm. *Radiographics* 1990;10(2):271-283.
6. Arvind NK, Singh O, Gupta S, Ali Q. Ureteral metastasis as the presenting manifestation of pancreatic carcinoma. *Rev Urol* 2013;15(3):124-130.
7. Richie JP, Withers G, Ehrlich RM. Ureteral obstruction secondary to metastatic tumors. *Surg Gynecol Obstet* 1979;148(3):355-357.
8. Cohen WM, Freed SZ, Hasson J. Metastatic cancer to the ureter. *J Urol* 1974;112(2):188-189.
9. Johnson RD, Johnson JR, Bannayan GA. Seminoma metastatic to ureter. *Urology* 1981;17(3):281-283.
10. Straub B, Müller M, Schrader M, Heicappell R, Hardung R, Miller K. Recurrent intraluminal ureteral metastasis of a testicular seminoma. *J Urol* 2000;164(2):443-444.