CASE REPORT

Rare presentation of discrete ureteral metastasis from prostate adenocarcinoma

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Abstract Ureteral metastasis from prostate cancer is rare. Here, we report a case of ureteral metastasis from prostate cancer in a 65-year-old man who presented with lower urinary tract symptoms. The initial prostate-specific antigen level was 372 ng/mL, and the Gleason score was 9 (4 + 5). Abdominal computed tomography revealed right hydronephroureter and bony metastasis but no obvious lymphadenopathy. The patient underwent bilateral orchiectomy. After 6 months, the metastasized lesion in the middle ureter was completely resolved, as determined through ureteroscopy. After hormone therapy, the prostate-specific antigen level decreased to <0.5 ng/mL. Discrete ureteral metastasis should be considered in advanced prostate cancer patients with obstructive uropathy.

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1. Introduction

Prostate cancer is one of the most common malignancies and the sixth leading cause of death in men worldwide. Commonly affected sites include the bones, lymph nodes, lungs, and liver. However, prostate cancer can also invade the ureters either by local extension of the cancer or by external compression of the enlarged metastasized lymph nodes.1-2 Ureteral obstruction caused by metastasis in patients without obvious periureteral or retroperitoneal lymph node involvement has rarely been reported. Here, we present an unusual case with advanced-stage prostate adenocarcinoma and right hydronephroureter secondary to the obstruction of the discrete ureteral metastasis.

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2. Case Report

A 65-year-old man presented to our hospital with lower urinary tract symptoms lasting for 1 year. Digital rectal examination revealed an enlarged prostate gland (6 cm × 5 cm) with an irregular surface and firm consistency palpated over the bilateral lobes. The initial prostate-specific antigen (PSA) level was 372 ng/mL, and the serum creatinine level was 1.8 mg/dL (normal range: 0.7–1.4 mg/dL). Transrectal ultrasound-guided prostate biopsy showed adenocarcinoma with a Gleason score of 9 (4 + 5). The tumor cells showed enlarged nuclei, prominent nucleoli, and a focal signet-ring cell-like feature (Figure 1).

Abdominal computed tomography (CT; Figure 2A) for cancer staging demonstrated right hydronephroureter, obstructed at the middle segment of the right ureter, and multiple osteoblastic bony metastases in the thoracolumbar spine. A technetium (99mTc) medronic acid whole-body bone scan also revealed multiple bony metastases. Considering that the patient had Stage IV prostate cancer (cT3bN0M1), he underwent bilateral orchiectomy. Ureteroscopy was performed concurrently to evaluate the cause of the right ureteral obstruction, revealing a stricture in the middle third part of the right ureter (Figure 2B). Ureteroscopic biopsy of the stricture site showed tumor cell infiltration, which was positive for cytokeratin (CK) AE1/AE3 and PSA and negative for CK7 and CK20. Both the tumor morphology and immunoprofile supported the prostatic origin of the discrete ureteral metastatic lesion (Figure 3). Because of the failure of retrograde double-J stenting, percutaneous nephrostomy and antegrade double-J stenting were performed. Percutaneous nephrostomy was removed a few days later after notable improvement of the hydronephroureter.

Six months after orchiectomy, the PSA level was 0.5 ng/mL. The metastatic lesion in the middle third part of the right ureter was completely resolved, as determined through ureteroscopy. The ureteral lumen was smooth without any indentation or obstruction. Microscopically, only some chronic inflammatory tissues and fibrosis were identified in the biopsy specimens. No tumor was detected.

3. Discussion

Prostate cancer is one of the most frequently diagnosed malignancies in men. Metastatic lesions are commonly observed in the bones, lymph nodes, lungs, and liver. Since Benejam et al. described the first case in 1987, few cases of discrete ureteral metastatic lesions of prostatic origin have been reported in the past few decades.

Several theories concerning the mechanisms underlying metastasis to the ureter have been proposed, including direct invasion of the tumor, lymphatic or hematogenous spread, or upon instrumentation.1–5 The clinical
manifestation in our patient differs from that of patients with common prostatic metastasis. Abdominal CT revealed no definitive metastatic lymph node or direct tumor invasion. Moreover, the patient had no history of ureteral instrumentation. Presumably, this type of discrete spreading may be attributable to the segmental pattern of the lymphatic drainage system of the ureter, which has no direct drainage network from the region of the prostate gland.6

According to current consensus, the treatment for metastatic prostate carcinoma is hormone therapy, including medical or surgical castration. Chalasani et al7 reported a case of prostate carcinoma invading from the ureter to the renal pelvis and observed an unsatisfactory outcome after androgen deprivation therapy for the metastatic lesion. Nevertheless, our patient showed a favorable response to hormone therapy, because the metastatic ureteral lesion was undetectable at 6 months follow-up.

In conclusion, we report a rare presentation of ureteral metastasis originating from prostate adenocarcinoma. The risk of discrete ureteral metastasis from prostatic origin should be considered when ureteral obstruction is noted in patients with advanced prostate cancer.

References