



Oncology

Metastatic bladder tumor from prostate cancer causing a ball valve-like obstruction in urination

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ABSTRACT

We report a rare case of prostate cancer that apparently metastasized to the bladder and formed a pedunculated mass that caused a ball valve-like obstruction in urination. A 57-year-old man with metastatic prostate cancer was referred to the emergency department for acute urinary retention. Cystoscopy and magnetic resonance imaging revealed a pedunculated mass measuring approximately 2 cm in size in the bladder neck that appeared to cause urinary obstruction in a ball valve-like manner. Transurethral resection of the bladder tumor was performed that resolved his symptom, and histopathological findings confirmed a diagnosis of poorly differentiated prostate adenocarcinoma.

Introduction

Distant metastasis to the bladder from primary prostate cancer is rare. We present a rare case of prostate cancer that apparently metastasized to the bladder and formed a pedunculated mass that caused a ball valve-like obstruction in urination.

Case presentation

A 57-year-old man with metastatic prostate cancer receiving degarelix acetate and abiraterone acetate presented to the emergency department for acute urinary retention requiring Foley catheterization. Cystoscopy showed that the prostate was small in appearance without apparent obstruction. There was a pedunculated mass measuring approximately 2 cm in size to the left of the bladder neck that appeared to be causing urinary obstruction in a ball valve-like manner (Fig. 1A). Another 1-cm nodular lesion was also noted in the anterior bladder wall (Fig. 1B). Magnetic resonance imaging (MRI) showed a 2-cm round mass on a small stalk in the bladder neck (Fig. 2) along with the enlargement of multiple left pelvic lymph nodes, indicating lymph node metastases. No evident continuity was observed between the mass and the prostate on cystoscopy and MRI. The patient's prostate-specific antigen (PSA) level had decreased to a nadir of 1.151 ng/mL from an initial level of 61.8 ng/mL after the initiation of hormonal therapy and had slightly

increased to 1.188 ng/mL at the time of urinary retention.

The patient underwent transurethral resection of the two bladder tumors. Histopathologic examination revealed both masses in the bladder to be composed of poorly differentiated adenocarcinoma under normal urothelium (Fig. 3A). Immunohistochemistry showed some of the tumor cells to be positive for PSA and synaptophysin (Fig. 3B and C), indicating neuroendocrine differentiation of the tumor. The patient was able to urinate without difficulty after the surgery. He continued to receive chemotherapy with cabazitaxel for treatment of the prostate cancer.

Discussion

Although bladder neck involvement by direct invasion is common in locally advanced prostate cancer, metastatic bladder tumor from prostate cancer is rare. As the prostate and bladder are adjacent organs, it is often difficult to confirm whether a bladder mass is derived from distant metastasis or direct invasion to the urinary bladder from prostate cancer. When a tumor in the bladder locates distant from the bladder neck and is composed of prostate cancer cells, it is considered to be a distant metastasis from prostate cancer via hematogenous or lymphatic spread.^{1,2} In the present case, although one of the resected masses was located at the bladder neck, it was thought to have more likely developed from distant metastasis for the following reasons: the unique

Abbreviations: MRI, Magnetic resonance imaging; PSA, Prostate-specific antigen.

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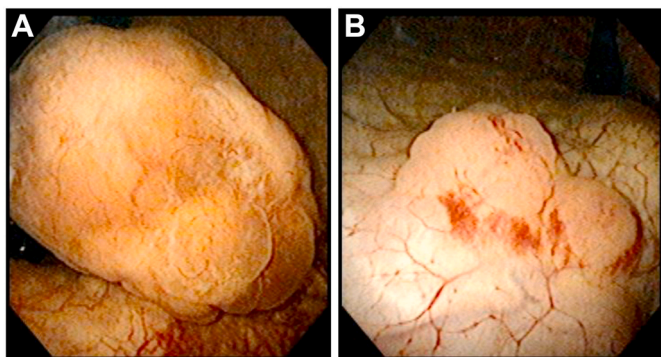


Fig. 1. Cystoscopic view showing a pedunculated mass measuring approximately 2 cm in size to the left of the bladder neck obstructing the internal urethra opening (A) and a 1-cm nodular lesion in the anterior bladder wall (B).

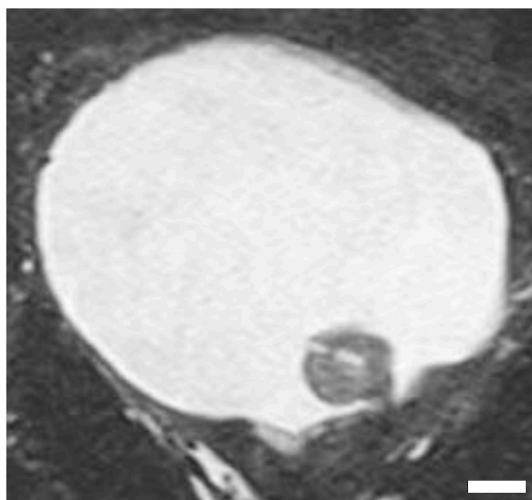


Fig. 2. Magnetic resonance imaging showing a 2-cm round mass on a small stalk in the bladder neck. Scale bar, 1 cm.

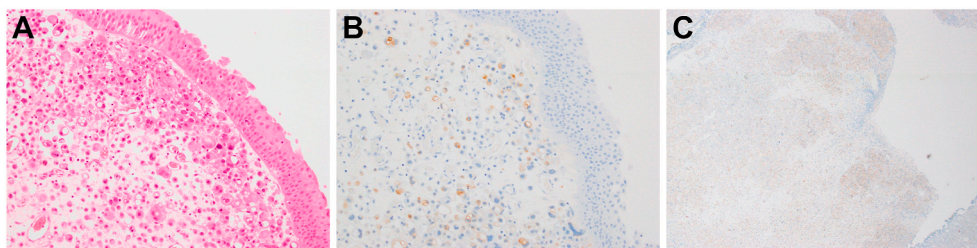


Fig. 3. (A) Representative image of hematoxylin and eosin staining of the tumor showing poorly differentiated adenocarcinoma under urothelium (200X magnification). Immunohistochemical staining of the tumor using antibodies against prostate-specific antigen (B) (200X magnification) and synaptophysin (C) (40X magnification).

contour of the mass with a small stalk was apparently different from a solid mass that would arise from direct invasion; cystoscopy and MRI showed no continuity between the bladder neck and the mass; and the other mass was located in the anterior bladder wall and was also composed of prostate cancer cells, indicating simultaneous development of both lesions through the spread of metastasis.

Immunohistochemistry is useful in determining the origin of metastatic cells. In the present case, the tumor cells were PSA-positive on immunohistochemistry, which led to a diagnosis of prostate origin. The tumor cells were also positive for synaptophysin, a marker suggestive of neuroendocrine differentiation of tumor cells.³ This finding was consistent with the clinical course of the patient with newly emerging bladder metastases and no significant increase in PSA level.

A pedunculated mass in the bladder neck can cause a ball valve-like obstruction in urination as in the present case, regardless of whether the mass is benign or malignant. Benign tumors including inverted papilloma and leiomyoma reportedly caused urinary retention by forming a mass with a small stalk in the bladder neck.^{4,5}

Conclusion

We experienced a rare case of prostate cancer that apparently metastasized to the bladder and formed a pedunculated mass that caused a ball valve-like obstruction in urination. The tumor was surgically removed, and the patient's symptom was successfully mitigated.

Consent

Written informed consent was obtained from the patient.

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Declaration of competing interest

We have no competing interest related to this study.

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