



Case Report

Metastatic Prostate Adenocarcinoma with Rare Ureteral Metastases: A Case Report

Omar Khan^{1*}, Micheal Williams², Mark T. Fleming²

¹Eastern Virginia Medical School at Old Dominion University, Norfolk, Virginia, USA

²Department of Urology at Eastern Virginia Medical School at Old Dominion University, Norfolk, Virginia, USA

***Corresponding author:** Omar Khan, Eastern Virginia Medical School at Old Dominion University, Norfolk, Virginia, USA

Citation: Khan O, Williams M, Fleming MT (2025) Metastatic Prostate Adenocarcinoma with Rare Ureteral Metastases: A Case Report J Urol Ren Dis 09: 1425. DOI: 10.29011/2575-7903.001425.

Received Date: 11 July 2025; **Accepted Date:** 17 July 2025; **Published Date:** 19 July 2025

Abstract

Prostate adenocarcinoma is a major concern for many elderly men and while patients may be diagnosed without any symptoms and tolerate treatment well, we must consider other presentations as well. Prostate cancer that has spread to the ureter should be on the differential diagnosis in an elderly man with new onset flank pain and hydronephrosis. Because ordering a PSA is a screening tool for prostate cancer, it can easily be added to the workup in any patient presenting to the emergency department. If there is a ureteral mass on imaging with confirmed prostate cancer, there should be a biopsy of the ureteral mass to rule out urothelial carcinoma. If this can't be performed, a CT urogram and ureteroscopy can be very helpful in determining the cause of the mass. While cases of prostate cancer spreading to the ureter are very rare, detailed workups that catch the spread of the disease earlier can lead to better long-term patient outcomes.

Introduction

Prostate Adenocarcinoma is a prevalent cancer in men, and it is estimated that up to 1 in every 8 men in the US have a lifetime risk of prostate cancer¹. Additionally, prostate cancer is the second most frequently diagnosed cancer with over 1.4 million cases since 2020 [1]. Risk factors for developing prostate cancer include increased age, genetics and family history. Many patients can be largely asymptomatic while diagnosed with prostate cancer and may have the disease for years before being diagnosed. While prostate cancer can spread to many sites of disease, the most common include the bone, lymph nodes, lungs, and liver. While these locations of metastases are the most common, metastases to other sites of diseases, such as the ureter in this patient, can also signal advanced disease [2]. In this case report, we highlight a patient who presented with flank pain and obstructive uropathy that was eventually found with a metastatic prostate cancer lesion and discuss the clinical significance of this finding.

Case Presentation

This patient is a 73-year-old man who has a history of chronic back pain and presented to the emergency department with right-sided flank pain. Initially, the patient was hypertensive, however,

the high blood pressure resolved shortly. The initial differential diagnosis was a kidney stone vs UTI vs a vascular renal injury given the severity and location of the patient's pain. However, a CT scan in the ED showed moderate obstructive uropathy of the distal right ureter likely secondary to a malignancy with associated pelvic lymphadenopathy of the pelvic sidewall. At the time, it was suspected that if there was a malignancy, it was likely urothelial carcinoma of the bladder. However, the workup in the ED displayed a PSA of 142. Once the patient's pain was well controlled, he was discharged with close follow-up with urology. A cystoscopy showed some right-sided filling defects with hydronephrosis, and a PET scan showed abnormal tracer uptake throughout the whole prostate and a soft tissue attenuating partially exophytic right interpolar renal lesion. A prostate biopsy confirmed clinical T4N1M1 Gleason 9 prostate adenocarcinoma, and a biopsy of the right ureter was also consistent with prostate adenocarcinoma. In addition, he had evidence of bilateral lymph node involvement and osseous metastatic disease.

Once the diagnosis of prostate cancer with metastasis to the lymph nodes, bones, and ureter was confirmed, there was a discussion with the patient regarding different treatment options. Because the patient was increasingly in more severe pain over several months

and had a pretreatment PSA of 142, the patient was placed on triplet therapy consisting of docetaxel, apalutimide, and androgen deprivation therapy.

Discussion

Most patients with metastatic prostate cancer have sites of diseases that include the bone, distant lymph nodes, and visceral organs. A population-based analysis conducted in 2014 showed that 84% of the patients included in the analysis had metastases to the bones [3]. Prostate cancer that has metastasized to the ureter is extremely rare, with about only 40-50 cases ever being reported [4]. One leading hypothesis as to why there are such few metastases of prostate cancer to the ureter is because of the difference in the lymphatic circulation of the ureter, as the ureter connects with the iliac lymph nodes while the prostates drain to the pelvic lymph nodes [4]. In symptomatic patients with flank pain who have yet to be diagnosed with prostate cancer, it can be quite challenging to come to the correct diagnosis. While in this case, we were able to obtain both a biopsy of the prostate and of the ureter, this is not always very feasible. In another similar case study, a ureteroscopy was performed to obtain a biopsy to determine whether the lesion present was transitional cell carcinoma vs metastases of the prostate [4]. However, the patient had a distal ureteral stricture that prevented a biopsy from occurring. They decided to perform a nephroureterectomy given the high suspicion of transitional cell carcinoma, however, the final pathology confirmed metastatic prostate cancer [5]. These cases help demonstrate that in elderly men with new onset hydronephrosis and flank pain, prostate cancer should be considered in the differential diagnosis. A CT urogram, ureteroscopy, retrograde pyelography, and a PSMA PET scan may help

determine the cause of the obstruction. Because there are so few cases of prostate cancer with metastases to the ureter, it is difficult to say if there should be a difference in management. A similar case report published in 2017, looked at 38 cases of prostate cancer that had spread to the ureter and found that in most cases, there was a nephroureterectomy performed because of the high clinical suspicion of upper urothelial cell carcinoma [5]. However, it is reasonable to perform a diagnostic ureteroscopy and biopsy before proceeding with surgery to confirm the diagnosis. If the mass is determined to be prostate cancer, patients should be placed on antiandrogen therapy to help regress the size of the mass [5]. In our case, we were able to obtain a biopsy that confirmed prostate cancer and will continue to monitor the size of the ureteral mass as the patient continues with anti-androgen therapy.

References

1. Orrason AW, Westerberg M, Albertsen P, Styrke J, Robinson D, et al (2022) Diagnostic activity impacts lifetime risk of prostate cancer diagnosis more strongly than life expectancy. *PLoS One* 17: e0277784.
2. Tsutsumi S, Kawahara T, Hattori Y, Mochizuki T, Teranishi J-L, et al. (2017) Ureter metastatic castration-resistant prostate cancer: a case report. *J Med Case Rep* 11: 215.
3. Gandaglia G, Abdollah F, Schiffmann J, Trudeau V, Shariat S F, et al (2014) Distribution of metastatic sites in patients with prostate cancer: A population-based analysis. *Prostate* 74: 210-216.
4. Munshi F, Shinder BM, Sadimin E, Mayer TM, Singer EA, et al (2019) Metastatic Prostate Cancer to the Renal Pelvis and Proximal Ureter: A Case Report and Review of the Literature. *Cancer Stud Ther.* 4: 119.
5. Chung HS, Kim MS, Cho YH, Hwang EC, Jung SI, et al (2017) A rare presentation of metastatic prostate cancer, initially a suspect for urothelial cell carcinoma of the ureter: a case report. *BMC Urol.* 17: 37.