



Case Report

Hematuria as the Initial Presentation of Ductal Prostate Adenocarcinoma: A Rare Case Report

Nahit Ögüt^{1*}, Mehmet Şahin², Fuat Kızılay²

¹Department of Urology, İzmir City Hospital, İzmir, Turkey

²Department of Urology, Ege University Faculty of Medicine, İzmir, Turkey

*Corresponding Author: Nahit Ögüt, Department of Urology, İzmir City Hospital, İzmir, Turkey

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Abstract

Background: Ductal adenocarcinoma of the prostate is a rare and aggressive histological subtype of prostate cancer that may present with atypical urinary symptoms such as gross hematuria. Because of its periurethral localization and occasionally misleading Prostate-Specific Antigen (PSA) levels, diagnosis may be delayed.

Case Presentation: A 77-year-old man presented with intermittent gross hematuria persisting for two months. One year earlier, he had undergone bipolar Transurethral Resection Of The Prostate (TUR-P) for obstructive lower urinary tract symptoms, and histopathology had revealed benign prostatic hyperplasia with a PSA level of 2.57 ng/mL. At the current presentation, PSA was elevated to 12.8 ng/mL. Pelvic magnetic resonance imaging and computed tomography urography demonstrated a large 10 × 9 cm cystic-necrotic pelvic mass originating from the prostate together with a metastatic lesion at the S4–S5 vertebral level. Endoscopic resection and biopsy revealed pure ductal adenocarcinoma of the prostate with Gleason score 4+4=8 (WHO ISUP Grade Group 4). The patient received androgen deprivation therapy combined with enzalutamide followed by local radiotherapy. Follow-up evaluation demonstrated marked biochemical and radiological response with PSA regression from 72 ng/mL to 0.5 ng/mL and significant tumor shrinkage on magnetic resonance imaging.

Conclusion: Ductal prostate adenocarcinoma may present with gross hematuria despite previously benign pathology and relatively low PSA levels. Rare aggressive prostate malignancies should be considered in elderly male patients presenting with unexplained hematuria.

Keywords: Ductal adenocarcinoma; Hematuria; Prostate cancer; Rare case

Introduction

Ductal adenocarcinoma of the prostate is a rare histological subtype accounting for less than 1% of all prostatic adenocarcinomas. Compared with conventional acinar adenocarcinoma, ductal adenocarcinoma is generally associated with more aggressive biological behavior, higher stage at diagnosis, and poorer oncological outcomes. Histologically, it is characterized by papillary and cribriform architectural patterns and commonly arises from the periurethral prostatic ducts. Unlike conventional prostate adenocarcinoma, patients with ductal adenocarcinoma may present with urinary symptoms such as gross hematuria,

obstructive lower urinary tract symptoms, or urinary retention due to its periurethral localization. In some patients, serum Prostate-Specific Antigen (PSA) levels may remain disproportionately low despite clinically significant disease, potentially delaying diagnosis [1,2].

Herein, we present a rare case of pure ductal adenocarcinoma of the prostate presenting with gross hematuria in a patient with a previous history of benign Transurethral Resection of the Prostate (TUR-P) [3,4].

Case Presentation

A 77-year-old man presented to our clinic with intermittent gross hematuria that had persisted for approximately two months. His

medical history revealed that he had undergone bipolar transurethral resection of the prostate (TUR-P) one year earlier at our institution because of obstructive lower urinary tract symptoms. At that time, his serum Prostate-Specific Antigen (PSA) level was 2.57 ng/mL, and histopathological examination of the resected tissue was reported as benign prostatic hyperplasia. At the current presentation, the patient's PSA level had increased to 12.8 ng/mL. Digital rectal examination revealed a moderately enlarged prostate with elastic consistency and fluctuant areas. Following urethral catheterization, contrast-enhanced computed tomography urography and multiparametric pelvic Magnetic Resonance Imaging (MRI) were performed. Radiological evaluation demonstrated a large malignant pelvic mass measuring approximately 10 × 9 cm with cystic and necrotic components extending toward both obturator spaces. The lesion showed diffusion restriction on diffusion-weighted MRI sequences and early arterial enhancement after intravenous contrast administration. The mass was considered to originate from the prostate. Fat planes between the lesion and the bladder were obliterated with focal fistulous tracts, while partial loss of the fat planes between the lesion and the rectum was also observed. Multiple suspicious bilateral inguinal and obturator lymph nodes measuring less than 1 cm in short axis were identified. Additionally, a metastatic lesion measuring approximately 25 × 18 mm invading the adjacent muscle planes was detected at the right S4-S5 vertebral level [5-7] (Figures 1-3).

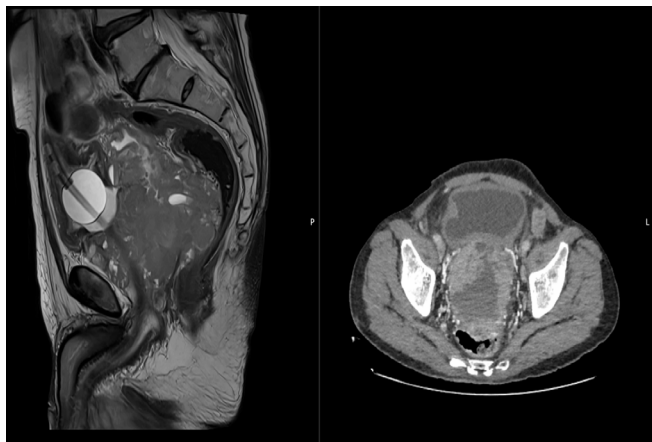


Figure 1: Preoperative pelvic magnetic resonance imaging (MRI) and computed tomography (CT) urography demonstrating a large locally advanced prostatic mass with cystic-necrotic components.

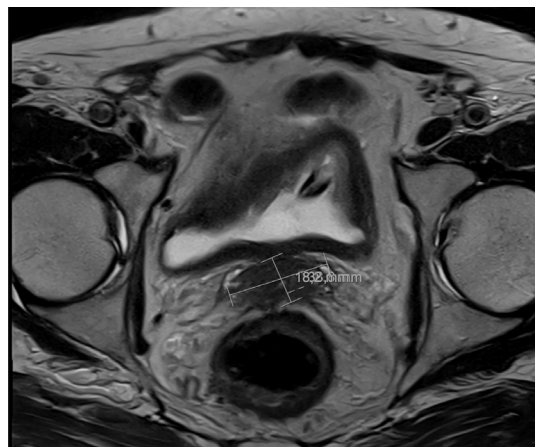


Figure 2: Post-treatment pelvic magnetic resonance imaging (MRI) obtained before radiotherapy demonstrating marked regression of the prostatic mass following treatment.

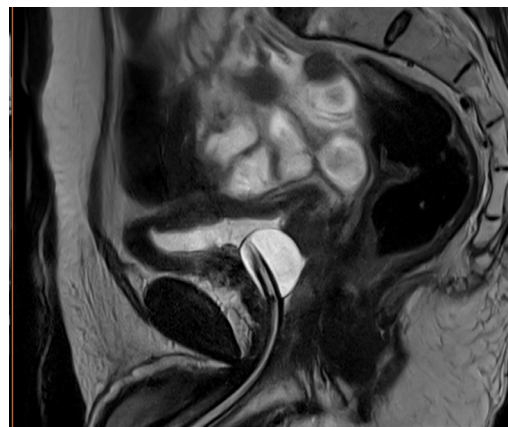


Figure 3: Post-treatment pelvic magnetic resonance imaging (MRI) obtained before radiotherapy demonstrating marked regression of the prostatic mass following treatment.

The patient subsequently underwent endoscopic surgical intervention. Cystoscopic evaluation demonstrated a normal bladder and prostatic fossa; however, active bleeding areas were identified at the prostatic base. Bipolar resection of the prostate was performed, and after opening the prostatic capsule, a papillary tumor filling the posterior aspect of the prostatic cavity was visualized. Tissue samples were obtained for histopathological examination, and hemostasis was achieved. A Foley catheter

was inserted postoperatively and removed on postoperative day 5. Histopathological examination revealed pure ductal adenocarcinoma of the prostate with a Gleason score of 4+4=8 (WHO ISUP Grade Group 4). Following multidisciplinary oncological evaluation, androgen deprivation therapy with a luteinizing hormone-releasing hormone (LHRH) analogue combined with enzalutamide was initiated. Before systemic treatment, the patient's PSA level increased to 72 ng/mL. Follow-up evaluation demonstrated a marked biochemical response with PSA regression to 0.5 ng/mL together with significant radiological regression of the pelvic mass on control MRI. Subsequently, the patient underwent local radiotherapy as part of multimodal treatment. At recent follow-up, the patient remained clinically stable without recurrent gross hematuria [8].

Results

Postoperatively, the patient's gross hematuria resolved significantly. Histopathological examination confirmed pure ductal adenocarcinoma of the prostate with Gleason score 4+4=8 (WHO ISUP Grade Group 4). Following androgen deprivation therapy combined with enzalutamide, the patient demonstrated a marked biochemical response with PSA regression from 72 ng/mL to 0.5 ng/mL. Follow-up magnetic resonance imaging revealed significant reduction in tumor size. Subsequently, local radiotherapy was administered, and the patient remained clinically stable during follow-up [9].

Discussion

Ductal adenocarcinoma of the prostate is a rare histological subtype accounting for less than 1% of all prostatic malignancies. Compared with conventional acinar adenocarcinoma, ductal adenocarcinoma is generally associated with more aggressive biological behavior, higher stage at diagnosis, and poorer oncological outcomes. Histologically, it is characterized by papillary and cribriform architectural patterns and commonly originates from the periurethral prostatic ducts. Because of its periurethral localization, ductal adenocarcinoma may present with atypical urinary symptoms such as gross hematuria, urinary obstruction, or urinary retention rather than elevated PSA levels alone. In some patients, PSA levels may remain disproportionately low despite clinically advanced disease, potentially delaying diagnosis. In the present case, the patient had previously undergone TUR-P with benign histopathological findings and relatively low PSA levels before the diagnosis of aggressive ductal adenocarcinoma was established. Radiological findings in our patient demonstrated an unusually large cystic-necrotic pelvic mass with locally invasive features and metastatic involvement at the time of diagnosis, emphasizing the aggressive clinical nature of this tumor subtype. Endoscopic visualization of the papillary

tumor arising from the prostatic cavity was also consistent with the characteristic morphology of ductal adenocarcinoma described in the literature.

Management of ductal adenocarcinoma remains challenging because of its rarity and aggressive behavior. Multimodal treatment approaches including androgen deprivation therapy, novel hormonal agents, and radiotherapy may provide significant clinical and biochemical responses in advanced disease. In our patient, treatment with luteinizing hormone-releasing hormone analogue therapy combined with enzalutamide followed by local radiotherapy resulted in marked PSA regression and significant radiological tumor shrinkage. Therefore, rare aggressive prostate malignancies such as ductal adenocarcinoma should be considered in elderly male patients presenting with unexplained gross hematuria, even in the presence of previously benign pathology or relatively low PSA levels.

Conclusion

Ductal adenocarcinoma of the prostate is a rare but aggressive malignancy that may present with atypical urinary symptoms such as gross hematuria. Previous benign TUR-P pathology and relatively low PSA levels do not exclude clinically significant disease. Early recognition and multimodal treatment are essential for optimal management and may provide significant clinical and radiological response even in advanced presentations.

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Ethical Considerations: Written informed consent was obtained from the patient for publication of this case report and accompanying video material.

Conflict of Interest: The authors declare no conflict of interest.

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