From Missed Opportunities to Multisystemic Catastrophe: Bilateral Obstructive Urosepsis and Renal Abscess in a Patient with Untreated PI-RADS 5 Prostate Lesion

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Abstract

We report the case of an 81-year-old man with lower urinary tract symptoms, who had undergone repeated prostatic artery embolisation for symptom relief. A prior MRI showed significant prostatic enlargement with a PI-RADS 5 lesion involving extracapsular tissue and seminal vesicles, but had not been evaluated by a urologist. He was admitted with bilateral obstructive urosepsis due to ESBL *Klebsiella pneumoniae* and acute kidney injury. Imaging revealed bilateral obstructive ureteral calculi, and management included emergency bilateral JJ stent placement and intravenous antibiotics. Four days later, he developed a left renal abscess, extensive deep vein thrombosis, and segmental pulmonary embolism, requiring anticoagulation and prolonged antibiotics. Definitive surgery included transrectal prostate biopsy, transurethral resection of the prostate, ureteroscopic lithotripsy, and stent management. Histopathology confirmed Gleason 8 prostate adenocarcinoma. This case highlights the complex interplay of obstruction, infection, anticoagulation, and high-risk prostate lesions, highlighting the need for timely urological evaluation and multidisciplinary coordination.

Keywords: Image Interpretation, Computer-Assisted; Prostatic Neoplasms/diagnostic imaging; Urethral Obstruction

Introduction

Obstructive pyelonephritis is a life-threatening emergency, particularly when bilateral and complicated by multidrug-resistant organisms.[1,2] Management becomes especially challenging when sepsis progresses to renal abscess formation, extensive venous thrombosis, pulmonary embolism, and when urgent urological interventions are required under anticoagulation.[3–5] Coexisting, untreated prostatic disease may further complicate clinical decision-making.[1] We present a case illustrating these challenges. This case report was written in accordance with the CARE guidelines and follows the recommendations of the International Committee of Medical Journal Editors (ICMJE) for authorship and publication ethics. Written informed consent was obtained from the patient for publication of this case report.

Case Report

An 81-year-old man, autonomous in his activities of daily living, had a history of severe lower urinary tract symptoms (LUTS) due to an enlarged prostate. He had previously undergone two prostatic arterial embolisations at another institution in an attempt to manage these symptoms. Following these procedures, attempts to remove his urinary catheter were unsuccessful, leaving him chronically catheterised. Of note, a prior prostate magnetic resonance imaging (MRI) had documented a PI-RADS 5 peripheral lesion with extracapsular extension and bilateral seminal vesicle involvement, in the context of an 81 cc prostate with a median lobe protruding into the bladder; at that time, his prostate-specific antigen was 8.73 ng/mL. However, this high-risk lesion had never been evaluated by a urologist or addressed through oncological work-up.

He presented acutely to the emergency department with dyspnea, hypotension, altered mental status, and metabolic acidosis. Initial laboratory tests showed a creatinine of 2.17 mg/dL (consistent with acute kidney injury), urea 61 mg/dL, elevated acute-phase reactants with neutrophilic leukocytosis, and a CRP 12 mg/dL. Computed tomography (CT) imaging (Figs. 1 and 2) revealed bilateral obstructive uropathy due to ureteral calculi (5 mm right, 7 mm left) with right-sided urothelial thickening and bilateral lower lobe pneumonic infiltrates. Blood and urine cultures grew ESBL *Klebsiella pneumoniae*. Given the clinical picture, the patient underwent emergency bilateral JJ stent placement and was admitted in the Intensive Care Unit due to progression to septic shock requiring endotracheal intubation and vasopressor support. He completed an extended course of intravenous ertapenem according to urine culture findings and was discharged after 23 days.

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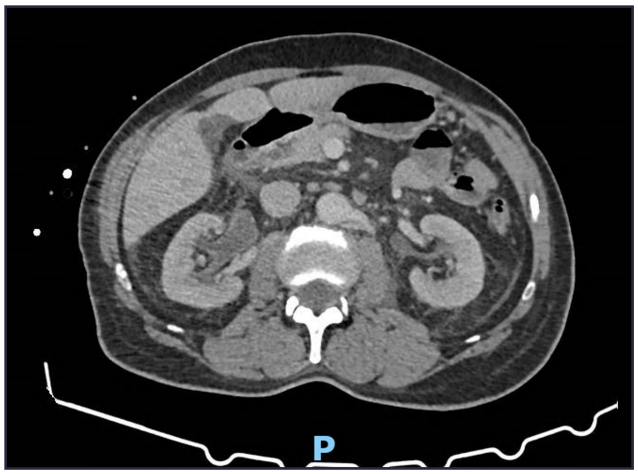


Figure 1 - Bilateral hydronephrosis, with right-sided urothelial thickening.

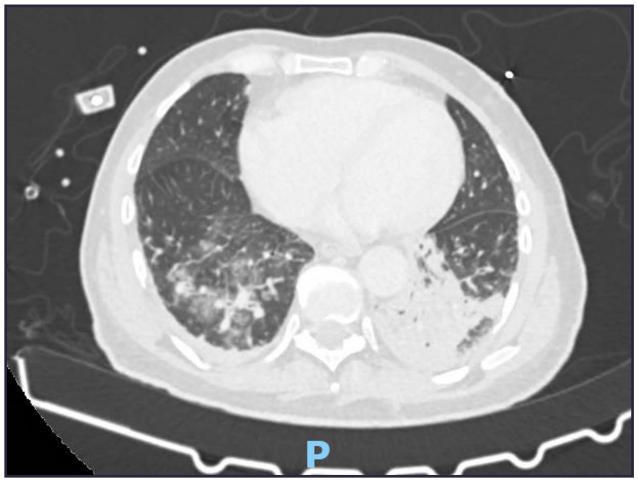


Figure 2 - Bilateral lower lobe pneumonic infiltrates.

Four days after discharge, he was readmitted with fever and confusion. CT demonstrated a 35 mm left renal abscess and a partially occlusive thrombus in the inferior vena cava (IVC) extending to the left common iliac vein, a thrombus in the right common femoral vein, and bilateral segmental pulmonary emboli (Figs. 3 and 4). Blood cultures again yielded ESBL *Klebsiella pneumoniae*. Anticoagulation with enoxaparin was initiated, and the renal abscess was managed conservatively with 30 days of meropenem and close monitoring. During this prolonged hospital admission, the patient developed intermittent gross haematuria, likely secondary to the trauma caused by chronic catheterisation and bilateral ureteral stents, requiring several periods of temporary suspension of anticoagulation. Follow-up CT after antibiotic therapy showed complete resolution of the renal abscess as well as spontaneous passage of the right ureteral calculus to the bladder.

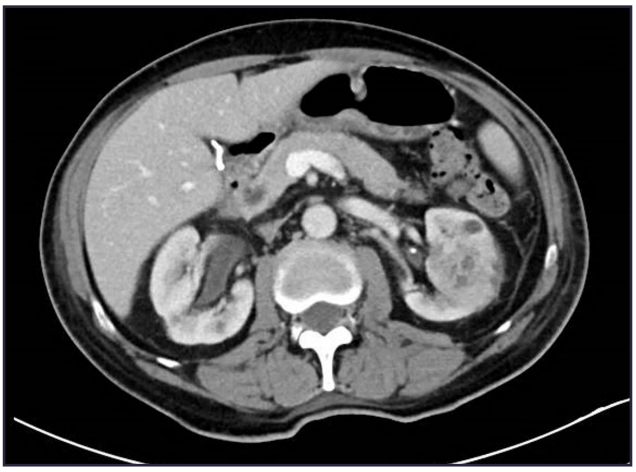


Figure 3 - Left renal abscess.



Figure 4 - Partially occlusive inferior vena cava thrombus.

Once clinically stable, the patient underwent elective surgery under spinal anesthesia. We performed a combined transrectal prostate biopsy, TURP, right JJ stent removal, left ureteroscopic lithotripsy and JJ stent replacement. At the time of elective surgery, his prostate-specific antigen had already risen to 10.30 ng/mL (from a previous value of 8.73 ng/mL). Anticoagulation was resumed 48 hours postoperatively without complications. Postoperative hematuria was successfully managed with bladder irrigation. He was discharged on therapeutic enoxaparin and α-/ antimuscarinic therapy pending left stent removal. Histopathology received after discharge confirmed ISUP 4 prostate adenocarcinoma, with perineural invasion present and no lymphovascular invasion identified.

Discussion

This case highlights the consequences of delayed integrated urological assessment in a patient with complex lower urinary tract pathology, ultimately resulting in a cascade of infectious, thromboembolic, and surgical complications. What initially appeared to

be symptomatic benign prostatic enlargement had, in fact, a coexisting high-risk prostate lesion on prior MRI (PI-RADS 5 with extracapsular extension and seminal vesicle involvement) that had not undergone timely specialist evaluation. While prostatic artery embolisation (PAE) may have provided temporary symptomatic relief, this case underscores that minimally invasive treatment strategies for LUTS should not delay appropriate oncological assessment when high-risk imaging findings are present.[6]

The infectious component of this case was complex and multifactorial. Initial bilateral ureteral obstruction, together with chronic bladder catheterisation, created favorable conditions for urinary stasis and bacterial colonisation, ultimately leading to severe obstructive pyelonephritis with septic shock.[7] Emergency decompression with bilateral JJ stent placement was essential for source control and clinical stabilisation.[1,2] However, despite appropriate decompression and culture-directed antimicrobial therapy, the patient developed recurrent infection complicated by left renal abscess formation. The isolation of ESBL-producing *Klebsiella pneumoniae* further limited antibiotic options and required prolonged intravenous treatment.

Further complicating management, the development of extensive venous thromboembolism (including inferior vena cava thrombosis, iliofemoral deep vein thrombosis, and bilateral segmental pulmonary emboli) added substantial complexity to this case. Sepsis is increasingly recognized as a potent prothrombotic state driven by endothelial dysfunction, activation of coagulation pathways, and inflammatory cytokine release, particularly in elderly and immobilised patients.[8–10] The initiation of therapeutic anticoagulation, however, introduced a competing bleeding risk manifested by recurrent gross hematuria in the setting of chronic catheterisation, bilateral ureteral stents, and persistent bladder outlet obstruction.[11] This created a difficult clinical balance between thromboembolic protection and bleeding control, directly influencing the timing and perioperative planning of definitive urological intervention.[5,12,13]

Definitive management required careful multidisciplinary coordination between Urology, Internal Medicine and Anesthesiology. Once the infectious focus was controlled and the patient clinically stabilised, a single-session combined approach - including transrectal prostate biopsy, transurethral resection of the prostate, ureteroscopic lithotripsy and JJ stent placement - allowed simultaneous treatment of bladder outlet obstruction, residual stone burden, and diagnostic clarification of the prostatic lesion, while minimising repeated anesthetic exposure. Early postoperative resumption of anticoagulation was achieved without thrombotic or major hemorrhagic complications, highlighting the value of individualized perioperative planning in high-risk patients.

In conclusion, this case illustrates the complex interplay of obstruction, infection, anticoagulation, and high-risk prostate lesions, highlighting the need for timely urological evaluation and multidisciplinary coordination.

Ethical Disclosures

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Confidentiality of Data: The authors declare that they have followed the protocols of their work center on the publication of patient data.
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Contributorship Statement

SR: Conceptualisation, data collection, revision and editing.
DC: Data collection, writing of the original draft and editing
SD, EF, GB, FG, AP, DS: revision and editing.
FF: Supervision and final approval
All authors approved the final version to be published.

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