Urinary symptoms and bilateral hydronephrosis in a woman with diabetes and a recorded diagnosis of kidney failure

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ABSTRACT

Background: Urinary symptoms accompanied by hydronephrosis in a patient with diabetes and kidney disease required assessment for infection, impaired urinary drainage, and deterioration in renal function.

Case presentation: A 63-year-old woman with type 2 diabetes mellitus and a recorded diagnosis of end-stage renal disease presented with a one-month history of dysuria, increased urinary frequency, reported hematuria, mild bilateral flank pain, generalized weakness, and bilateral pedal edema. Urinalysis showed positive leukocyte esterase, 14–16 white blood cells per high-power field, and 2–4 red blood cells per high-power field. Nitrite and dipstick blood were negative, and trace protein was detected. Ultrasonography showed mild bilateral hydronephrosis, kidneys measuring approximately 12 cm, and diffuse urinary bladder wall thickening of approximately 5 mm. No urinary calculi or focal renal lesions were reported. The clinical record documented treatment for a urinary tract infection and supportive intravenous therapy; however, urine culture results, renal-function measurements, treatment details, and follow-up outcomes were unavailable.

Conclusion: The presentation supported a clinical suspicion of urinary tract infection associated with bilateral hydronephrosis. However, the available evidence did not establish the infecting organism, the cause of collecting-system dilatation, or the stage and trajectory of kidney dysfunction.

Keywords: *diabetes mellitus; urinary tract infection; hydronephrosis; kidney failure; bladder wall thickening; case report.*

Introduction

Urinary symptoms in patients with diabetes and kidney disease required careful assessment because infection, impaired bladder emptying, and urinary tract obstruction could produce overlapping clinical findings. Antimicrobial selection also required consideration of illness severity, microbiological evidence, kidney function, and structural urinary abnormalities [1].

The Kidney Disease: Improving Global Outcomes (KDIGO) 2024 guideline classified chronic kidney disease according to cause, glomerular filtration rate, and albuminuria. The G5 category corresponded to an estimated glomerular filtration rate below 15 mL/min/1.73 m², while establishing chronicity required evidence of abnormalities persisting for at least three months [2]. Consequently, a recorded diagnosis of end-stage renal disease required supporting longitudinal renal-function data and clarification of kidney replacement therapy status.

This report described urinary symptoms, pyuria, and bilateral hydronephrosis in a woman with diabetes and a recorded diagnosis of kidney failure. Its organization followed the CARE reporting framework, with unavailable information identified explicitly [3].

Case presentation

Patient information and clinical history

A 63-year-old woman with type 2 diabetes mellitus presented with dysuria, increased urinary frequency, intermittent reddish urine, mild bilateral flank pain, generalized weakness, and bilateral pedal edema. Her

urinary symptoms had persisted for approximately one month.

Her surgical history included cholecystectomy approximately eight to nine years before presentation. The available record included a diagnosis of end-stage renal disease but did not provide the duration of diabetes, baseline renal-function measurements, medication history, or dialysis status.

Clinical findings

Bilateral pedal edema was described in the clinical history. Reliable admission vital signs and a complete physical examination were unavailable. Accordingly, the presence or absence of fever, hemodynamic instability, suprapubic distension, renal-angle tenderness, or uremic manifestations could not be established.

Investigations

Urine appeared pale yellow and turbid, with a specific gravity of 1.020 and a pH of 6.0. Leukocyte esterase was positive, and trace protein was detected. Microscopy showed 14–16 white blood cells per high-power field and 2–4 red blood cells per high-power field. Nitrite, glucose, and dipstick blood were negative.

Although the patient reported intermittent reddish urine, the available specimen showed negative dipstick blood and a small number of microscopic red cells. The relationship between the reported discoloration and the tested specimen remained uncertain.

The urinalysis findings were summarized in **Table 1**.

Table 1. Urinalysis findings at presentation

Parameter	Recorded result
Appearance	Pale yellow and turbid
Specific gravity	1.020
pH	6.0
Leukocyte esterase	Positive
Nitrite	Negative
Protein	Trace
Glucose	Negative
Dipstick blood	Negative
White blood cells	14–16/HPF
Red blood cells	2–4/HPF

HPF, high-power field. Laboratory-specific reference intervals were unavailable.

The narrative stated that biochemical investigations had been performed, but serum creatinine, urea, electrolytes, estimated glomerular filtration rate, and previous renal-function results were not supplied. Urine culture and antimicrobial susceptibility results were also unavailable.

Ultrasonography showed kidneys measuring approximately 12 cm and mild bilateral hydronephrosis. No urinary calculi or focal renal lesions were reported. The urinary bladder wall was diffusely thickened to approximately 5 mm. Bladder volume at the time of measurement and post-void residual volume were not documented.

Additional findings included mild hepatomegaly, with a liver length of approximately 16 cm, and grade I fatty change. No free intraperitoneal fluid was reported. Imaging findings were summarized in **Table 2**.

Table 2. Reported ultrasonographic findings

Structure	Recorded finding
Right and left kidneys	Approximately 12 cm in length
Collecting systems	Mild bilateral hydronephrosis
Urinary calculi	None reported
Focal renal lesions	None reported
Urinary bladder	Diffuse wall thickening of approximately 5 mm
Bladder calculus or focal mass	None reported
Post-void residual volume	Not documented
Liver	Approximately 16 cm with grade I fatty change
Peritoneal cavity	No free fluid reported

The manuscript referred to axial and coronal CT images as demonstrating hydronephrosis. However, neither the images nor the formal CT report accompanied the supplied text. Proposed legends were numbered as **Figures 1 and 2** below; their findings required confirmation against the original images.

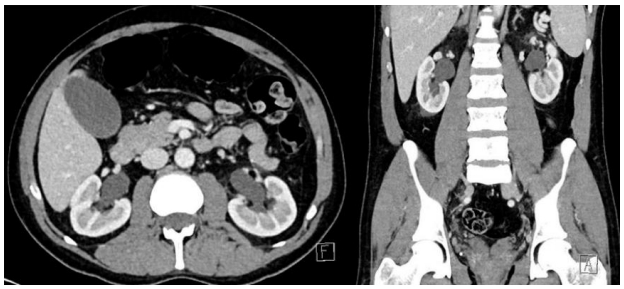


Figure 1. Axial and coronal CT views of the urinary tract. Panels A and B were described in the source manuscript as axial and coronal views showing collecting-system dilatation.

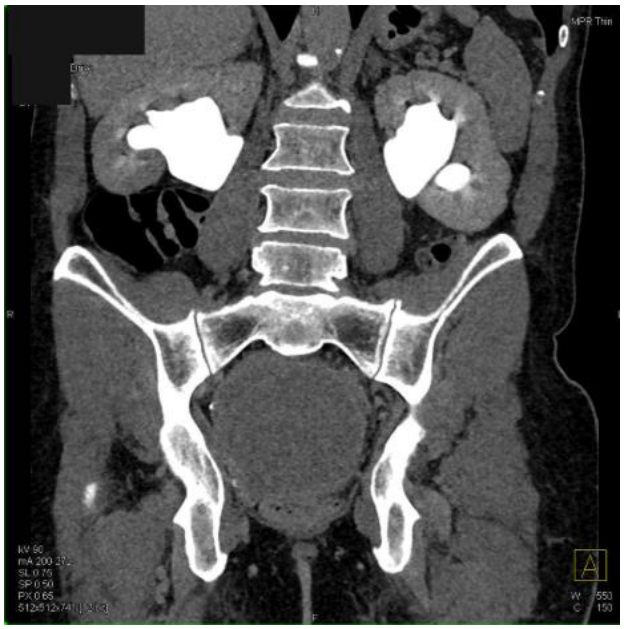


Figure 2. Additional coronal CT view of the urinary tract. The source manuscript described this image as showing bilateral hydronephrosis. The image and formal radiology report were unavailable for independent assessment.

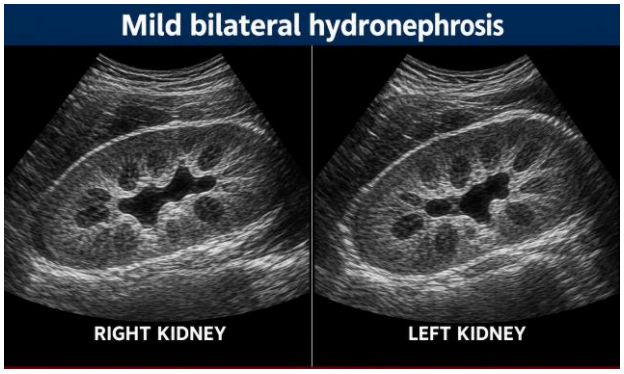


Figure 3. An ultrasound of this patient showed mild bilateral hydronephrosis.

Table 3: Diagnostic reasoning and treatment

Diagnosis	Evidence
Symptomatic E. coli UTI with urinary retention	Dysuria, frequency, pyuria, pretreatment culture and high residual volume
CKD G5 A3 not receiving dialysis	eGFR about 10 for six months; prior ACR 680 mg/g; presumed diabetic and hypertensive kidney disease without biopsy confirmation
Acute deterioration on CKD with a postrenal component	Creatinine rises to 6.1 mg/dL and returns toward baseline after drainage and treatment; exact AKI stage cannot be assigned from the available timing
Detrusor underactivity	Persistent residual urine after infection resolution and confirmatory urodynamics

Differential diagnoses include stone disease, urothelial malignancy, pelvic outlet obstruction and noninfectious cystitis. No stone or gross mass is seen, but the reported visible hematuria still requires urologic evaluation. The afebrile presentation and culture do not by themselves establish pyelonephritis, bacteremia or sepsis.

Treatment

Urology performs urethral catheterization using aseptic technique. Urine output, blood pressure, fluid balance, potassium and creatinine are monitored for post obstructive diuresis and electrolyte shifts. No sustained high output diuresis develops. Routine large fluid boluses are avoided because she is not hypotensive and has edema.

After the urine specimen is collected, ceftriaxone 1 g intravenously every 24 hours is started and continued after susceptibility review, for seven total days. This is an illustrative selected regimen, not a universal prescription. The pharmacist review identified no renal only dose adjustment for this ceftriaxone regimen; allergy, liver function and adverse effects are reviewed. Duration is reassessed because evidence for short courses is less direct in advanced CKD and obstruction.

Nephrology reviews mild hyperkalemia, acidosis and volume status. Potassium containing products and nephrotoxins are avoided; oral sodium bicarbonate is continued with blood pressure and fluid monitoring. Insulin is adjusted to bedside glucose with attention to hypoglycemia risk. CKD anemia and mineral abnormalities are assessed for outpatient treatment after the acute illness.

No urgent dialysis is required in the course: potassium and acidosis improve, edema remains manageable, and no pulmonary edema, encephalopathy or pericarditis develops. Education about kidney replacement options and access planning continues. A low eGFR alone is not the trigger for starting dialysis [1].

A supervised catheter removal trial on day 3 leaves a residual of 420 mL. The patient and caregiver learn

clean intermittent catheterization four times daily, adjusted using drained volumes and urologic review. They demonstrate technique before discharge. Persistent obstruction or failure to improve would prompt urgent reassessment for upper tract drainage.

Table 4: Follow up and outcome

Measure	Admission	Day 3	Day 7	Week 6
Creatinine mg/dL	6.1	5.3	4.9	4.8
Potassium mmol/L	5.4	4.8	4.6	4.7
Bicarbonate mmol/L	18	20	22	22
Urinary symptoms	Dysuria and frequency	Markedly improved	Resolved	No recurrence
Collecting system	Mild bilateral dilation	Reduced at 48 h	Improving	Resolved on ultrasound

outcome: At six weeks, eGFR is approximately 10 mL/min/1.73 m² and she remains off dialysis under close nephrology follow up. Bladder emptying is maintained by intermittent catheterization; spontaneous emptying remains incomplete. No antibiotic associated diarrhea, rash or symptomatic hypoglycemia is recorded in the scenario.

Because she reported visible hematuria, urology completes cystoscopy after infection resolution and selects retrograde upper tract evaluation in view of severe renal impairment. No bladder tumor or upper tract filling defect is identified. A repeat urinalysis shows 0–2 RBC/HPF; recurrent visible bleeding would require reassessment.

Table 5. Clinical timeline

Time point	Recorded event
Approximately 8–9 years before presentation	Cholecystectomy had been performed
Approximately 1 month before presentation	Urinary symptoms had begun
At presentation	Dysuria, frequency, reported hematuria, flank discomfort, weakness, and pedal edema were described
During evaluation	Urinalysis showed pyuria; ultrasonography showed mild bilateral hydronephrosis and bladder wall thickening
During treatment	Supportive intravenous therapy and treatment for urinary tract infection were recorded
After treatment	Follow-up findings and clinical outcomes were unavailable

Discussion

This patient presented with urinary symptoms and pyuria in association with bilateral hydronephrosis and a recorded diagnosis of advanced kidney disease. The principal diagnostic uncertainty concerned the relationship between these findings.

Urinary symptoms and infection

The combination of dysuria, frequency, leukocyte esterase positivity, and pyuria supported a clinical suspicion of urinary tract infection. However, those findings did not identify an organism or establish antimicrobial susceptibility. The absence of culture results also prevented assessment of whether treatment had been microbiologically appropriate.

The IDSA guidance emphasized assessment of severity and patient-specific factors when selecting antibiotics, followed by targeted therapy when culture and susceptibility results became available [1]. The missing prescription and renal-function data prevented a comparable assessment of treatment in this patient. KDIGO classification depended on renal-function and albuminuria data interpreted with evidence of chronicity [2]. Kidney length alone did not supply the missing functional information.

Hematuria and reporting limitations

The patient's account of reddish urine differed from the findings in the available specimen. That discrepancy was retained rather than attributed to a presumed cause. Its interpretation would have required clarification of symptom timing, repeat urine testing, and the results of any subsequent urologic assessment.

The major limitations were the absence of follow-up outcomes. These omissions restricted conclusions about diagnosis, causation, and treatment response. The CARE framework identified diagnostic assessment, intervention, follow-up, and informed consent as essential reporting components [3].

Conclusion

This case described urinary symptoms and pyuria accompanied by mild bilateral hydronephrosis in a woman with diabetes and a recorded diagnosis of kidney failure.

Declarations

Ethics Approval: Ethical approval for this case report was obtained from the Institutional Review and Ethics Board (IREB), Islamabad Medical and Dental College (IMDC), under approval number **302/IMDC/IREB-2026.**

Consent, and Confidentiality: Informed consent was obtained from the patient for publication of the case report and any accompanying clinical information or images, as applicable. Patient confidentiality and privacy were maintained throughout the preparation of this report.

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

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