

Emphysematous Pyelonephritis Caused by *Candida tropicalis*

To the Editor:

Emphysematous pyelonephritis is a severe necrotizing infection characterized by gas formation within the renal parenchyma, collecting system, and perinephric tissues.¹⁻³ This condition commonly occurs in women with diabetes mellitus and obstructive uropathy.¹⁻⁵ *Escherichia coli* and *Klebsiella* are the most common organisms cultured.¹⁻⁵ Rarely, *Candida* species have been reported to cause emphysematous pyelonephritis.⁶

CASE REPORT

A 51-year-old African-American transgender male with history of intravenous drug abuse presented to the emergency department with nausea, vomiting, and oliguria for 10 days. She had severe abdominal pain in the right upper quadrant and generalized weakness. She denied fever, dysuria, and flank pain.

On examination, she appeared lethargic. She was afebrile, with a heart rate of 114 beats per minute and blood pressure of 206/110 mm Hg. Abdominal examination revealed tenderness to palpation in the right flank and costovertebral angle. Otherwise, the examination was unremarkable.

Laboratory results showed leukocytosis of 19,800/mm³, hemoglobin of 12.5 g/dL, and platelet count of 292,000/mm³. Sodium was 119 mmol/L, potassium 7.4 mmol/L, chloride 83 mmol/L, bicarbonate 17 mmol/L, blood urea nitrogen 130 mg/dL, creatinine 10.57 mg/dL, and blood glucose 494 mg/dL. An abdominal computed tomography (CT) scan showed edema and perinephric stranding involving the right kidney, and air within the right renal collecting system (Figure).

Antegrade pyelogram showed obstruction in the right renal pelvis by a fungal ball. A percutaneous nephrostomy

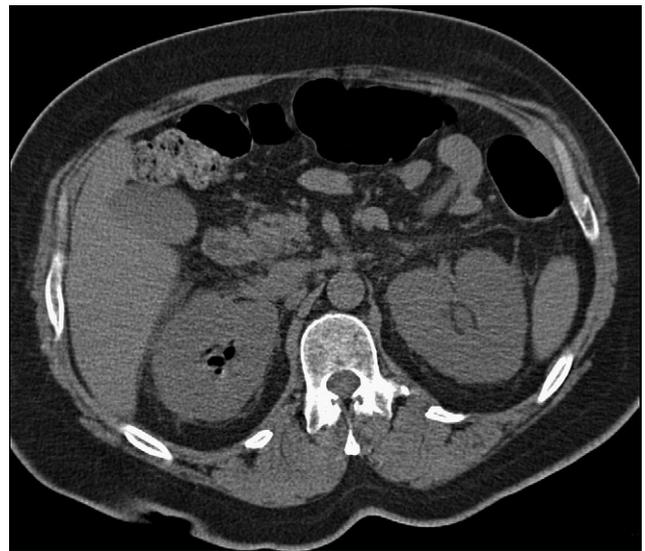


Figure Computerized tomography of abdomen showing gas collection in the right renal pelvis.

catheter was placed and fluid cultures grew *Candida tropicalis*. The patient was managed conservatively with intravenous Amphotericin B and hemodialysis. During the hospital course, she was diagnosed with diabetes mellitus and her hemoglobin A1C was 16.8%. Subsequent imaging studies showed that the fungal ball had disintegrated. Her clinical condition and renal function gradually improved.

DISCUSSION

In 1962, Schultz and Klorfein⁷ first used the term emphysematous pyelonephritis to describe an acute infectious process resulting in gas formation in the renal parenchyma. It has been postulated that various factors, including mixed acid fermentation by gas-forming bacteria, high tissue glucose concentrations, impaired immunity, and tissue ischemia, contribute to the gas formation.⁴

Emphysematous pyelonephritis usually presents with fever, flank pain, and pyuria.¹⁻⁴ The presentation also could include thrombocytopenia, acute renal failure, altered mental status, and shock.⁴ Rarely, emphysematous pyelonephritis could be the presenting feature of diabetes mellitus, as in our patient.² Also, our patient is the first reported case of a transgender male with emphysematous pyelonephritis.

CT scan is the most accurate method of diagnosing emphysematous pyelonephritis.¹⁻³ Wan et al⁵ described 2 types based on CT findings. Type I is characterized by

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parenchymal destruction with streaky or mottled gas, but no fluid collection. Type II is characterized by renal or perirenal fluid collection with bubbly or loculated gas or gas in the collecting system. Type I has a higher mortality rate (69%) than Type II (18%).⁵ Our patient's presentation was consistent with Type II emphysematous pyelonephritis.

Treatment often consists of a combination of medical therapy and percutaneous drainage.⁴ Urological consultation is prudent, as nephrectomy may be required for severe or resistant cases.

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