Letter to the Editor

Air-fluid level on plain abdominal film: A hint for emphysematous pyelonephritis

To the Editor,

A 55-year-old woman with a history of diabetes and hypertension under regular medication control visited our emergency department due to vague periumbilical pain and nausea. She had no fever, diarrhea, flank soreness, dysuria, or recent trauma history, and the pain had not radiated to her back.

On physical examination, there was no evidence of focal abdominal tenderness or costovertebral angle knocking pain. Abdominal radiography showed extraluminal air-fluid levels in the left upper quadrant (Fig. 1A). Blood investigations revealed a blood glucose level of 240 mg/dL, serum creatinine 0.6 mg/dL, C-reactive protein 5.51 mg/dL, and a total white cell count of 9500/µL, with 81.6% neutrophils. Urinalysis revealed pus cells and red blood cells. The patient became febrile and had cold sweats 3 hours later.

The kidney—ureter—bladder imaging during follow-up showed abnormal gas collection over the region of the left kidney, along with free air outside the margin of the Gerota fascia (Fig. 1B). Computed tomography (CT) of the entire abdomen revealed multiple air bubbles in the left renal parenchyma, pararenal space, and retroperitoneum (Fig. 2). A diagnosis of emphysematous pyelonephritis was made on the basis of the presence of air within the kidney.

The patient received emergent left nephrectomy and parenteral antibiotics treatment. Blood culture, urine culture, and pus culture from intraoperative drainage were positive for Escherichia coli. She was discharged 16 days after surgery.

Emphysematous pyelonephritis (EPN) is a severe necrotizing infection of the kidney with gas formation in the renal parenchyma or perirenal tissues. It more commonly occurs among females (approximately 72–75%) than males (approximately 25–28%).1 Left side involvement (approximately 52–60%) is more commonly seen than the right side.1 The most common causative pathogens are E. coli and Klebsiella followed by Proteus.2 EPN commonly occurs in patients with diabetes, and the presentation of EPN resembles acute pyelonephritis. However, the clinical course may be fulminant and life-threatening if not recognized and treated promptly.

Emphysematous pyelonephritis is a radiologic diagnosis that requires imaging, because most of the clinical and the laboratory findings will only indicate sepsis of renal origin. CT
scanning is the definitive examination. The radiologic classification has been proposed based on the location and extension of the gas in the kidney. Risk factors for mortality in this disease are thrombocytopenia, acute renal failure, disturbance of consciousness, hyponatremia, and shock. The management of EPN, including conservative parenteral antibiotics, percutaneous catheter drainage, and nephrectomy, has been proposed according to the classification of EPN and risk factors. In conclusion, we present a case with an initially easily overlooked but critical infection requiring a high index of alertness in the emergency department.

Conflicts of interest

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References


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