

## **EMPHYSEMATOUS PYELONEPHRITIS NOT IDENTIFIED ON ROUTINE RENAL ULTRASOUND**

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Emphysematous pyelonephritis (EPN) is an uncommon, life-threatening acute suppurative infection of renal parenchyma with gas forming bacteria like E coli. The presence of gas in kidney may interfere with imaging the renal parenchyma by ultrasound.

A 68y/o female with uncontrolled diabetes mellitus presented with a 3 day history of fevers, and abdominal pain. She was tachycardic and febrile on presentation. Examination was significant for mild tenderness on deep palpation of left lower quadrant of abdomen. There was no costovertebral angle tenderness. Her laboratory work up was most significant for glucose = 616 mg/dl, BUN = 33 mg/dL, Creatinine was 2.4 mg/dL, WBC count =17900 /mm<sup>3</sup> and HbA1c = 12.5%. Urinalysis revealed glucose>1000, negative nitrite and leukocyte esterase. Urine culture was negative. Blood cultures revealed E Coli bacteremia. Renal ultrasound to evaluate the acute renal failure demonstrated a 13cm right kidney with normal echotexture, but was unable to visualize a left kidney. A CT scan revealed emphysematous pyelonephritis of the left kidney with most of renal parenchyma replaced by gas; no fluid collection could be identified. She ultimately required nephrectomy.

We came across other 2 cases in which uncontrolled DM was presented as EPN and in one of the cases diabetic ketoacidosis was difficult to control due to EPN.

In this case neither clinical exam nor urine culture was initially suggestive of renal infection, and routine renal ultrasound failed to identify the severe renal parenchymal changes. The case reveals the limitations of ultrasound in imaging an emphysematous kidney, and emphasized the importance of complete imaging of the kidneys and collecting system in the setting of bacteremia with acute renal failure.