Concealed diagnosis of duodenal perforation in a patient with emphysematous pyelonephritis: the dilemma of air in the right perirenal space

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DESCRIPTION

A 45-year-old woman with diabetes was referred to us with history of pain in her right flank associated with fever since the past 15 days. She had initially presented to a local practitioner who had prescribed her antibiotics and analgesics, but got no respite. On local examination, she was found to have fullness and tenderness in her right flank. Her routine blood/urine investigations showed hyperglycaemia, leucocytosis, pyuria and ketonuria. Her ultrasonography showed an enlarged right kidney with coarse echoes within the renal parenchyma with perinephric air and fluid collection. We performed an ultrasound-guided right percutaneous nephrostomy (PCN) and pigtail catheter placement in the perinephric collection. Her pigtail catheter drained bilious fluid which on analysis revealed the presence of bile salts. The urine culture and the cultures of fluids obtained from the PCN and pigtail catheter revealed growth of *Escherichia coli*, while the blood culture was sterile. The patient underwent contrast-enhanced CT of the abdomen with oral contrast which revealed presence of concomitant emphysematous pyelonephritis (EP) and a duodenal fistula communicating with the right perinephric space (figure 1). The patient was managed in conjunction with an endocrinologist and a surgical gastroenterologist. Hyperlycaemic control was achieved and a feeding jejunostomy was fashioned. The patient was administered intravenous piperacillin and tazobactam during her stay in the hospital and oral levofloxacin for 10 days

postdischarge as per her culture reports. After the patient's general condition improved, open repair of the duodenal perforation was performed. The PCN tubes and the pigtail catheters were eventually removed once the pigtail catheter drained less than 20 mL per 24 hours.

EP constitutes an emergency with a male-to-female ratio of 6:1. EP is an acute necrotic infection of the kidney which results in the formation of gas within the renal parenchyma, the collecting system, the perinephric tissues, and rarely the spermatic cord and the scrotum.^{1 2} Duodenal perforation allows for potential direct communication between the right anterior pararenal space and the right perirenal space due to variable insertion of the right anterior renal fascia onto the lateral wall of the descending duodenum rather than always on the periaortocaval connective tissues. Therefore, the presence of air in the right perirenal space should alert the radiologist to the possibility of duodenal perforation.³ Although there are reports in the literature where one of these conditions mimics the other due to similar radiographic pictures, we present a rarity where both these conditions are coexisting in the same patient.

Learning points

- ▶ Emphysematous pyelonephritis and duodenal perforation are both important causes of air in the right perirenal space. While they may mimic each other due to similar radiographic appearance, the presence of one of these conditions should not make us ignore the possibility of the concomitant presence of the other.
- ▶ When, in a patient with primary renal pathology, the clinical picture of the patient is suggestive of duodenal perforation, we should strongly consider the administration of oral contrast while obtaining a contrast-enhanced CT scan of the patient.
- ▶ The presence of bile in the perinephric drain of a patient should set the alarm bells of duodenal perforation ringing in our ears.

Figure 1 Images showing the extravasation of oral contrast via the duodenal perforation into the right anterior perirenal space (arrow), in both plain (upper two images) and intravenous contrast-enhanced (lower two images) CT images. The presence of nephrostomy tube and pigtail catheter in the right renal collecting system and right renal perinephric space can also be noted.

Contributors SM conceived the case report. SM and VJS were major contributors towards writing the manuscript. RJS, SP and VJS treated the patient and also interpreted the patient data. SM and SP were involved in the review. All authors read and approved the final manuscript.

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