

Images in Nephrology
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Emphysematous pyelonephritis caused by *Bacteroides fragilis*

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Case

A 50-year-old male presented with fever and anorexia of 2 days' duration and a 3-week history of abdominal fullness. Two years earlier, he had left-sided acute pyelonephritis, incomplete duplicated ureters and a ureteral stone. The stone was removed. He also had hypertension, gout, and chronic renal failure with a serum creatinine 3.1 mg/dl. Examination of the abdomen revealed a palpable mass with tenderness at the left upper quadrant. Investigations showed a white blood cell count of 21190 cells/mm³, blood urea nitrogen 84 mg/dl, serum creatinine 5.4 mg/dl, and pyuria. The radiographs of the abdomen showed a huge retroperitoneal cavity filled with air and fluid (Figures 1 and 2). Emphysematous pyelonephritis (EPN) caused by ureteral stone obstruction was diagnosed. Percutaneous nephrostomy was performed immediately. *Bacteroides fragilis* was isolated from the purulent fluid but not blood culture. Magnetic resonance imaging demonstrated hydronephrosis of the left lower pole kidney compressing the ureteropelvic junction of the upper pole (Figure 3). Due to difficulty in retrograde extraction of calculus, left heminephrectomy was attempted but failed. Subsequently, he had a left nephrectomy with serum creatinine 4.1 mg/dl 6 months after operation.

Discussion

Emphysematous pyelonephritis is a rare, severe necrotizing and life-threatening infection of the kidney [1]. It usually occurs in patients with diabetes or urinary tract obstruction and the most common etiology is *Escherichia coli* [1]. To our knowledge, anaerobic bacteria, such as *B. fragilis*, had never been found to be a causative pathogen except in one case with *Clostridium* [2]. Anaerobes were indigenous to the lower urethra and might have invaded the upper urinary tract by an ascending route, or spread from adjacent organs such as the bowel or uterus. Obstruction of duplex ureters can be caused by ureteropelvic junction obstruction, calculus, or ectopic ureterocele. In these situations, decreased oxygen tension and impaired tissue perfusion might develop and contribute to EPN [1]. We recommend that empirical treatment should also cover anaerobes in obstruction-related EPN.

Conflicts of interest statement. None declared.

References

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Fig. 1. Plain film of the abdomen shows a huge lucent area superimposed at the left upper quadrant of the abdomen.

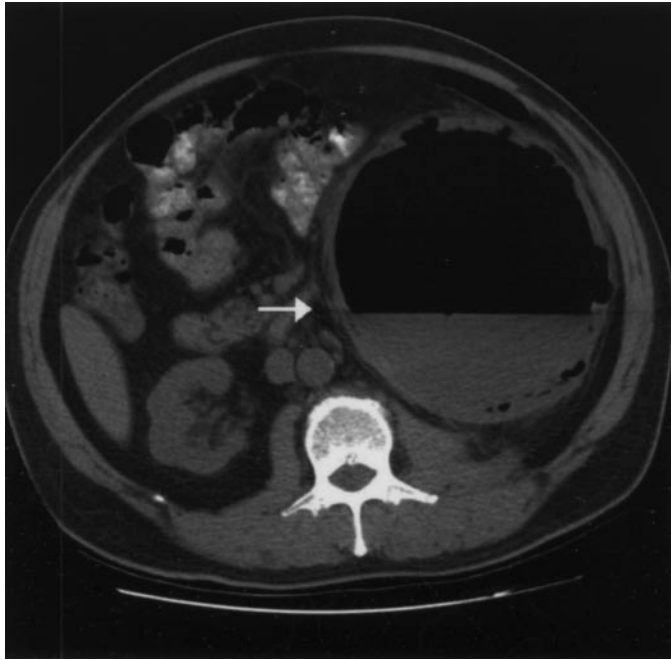


Fig. 2. CT of the abdomen shows a large amount of gas with an air-fluid level (13 × 15.5 × 18 cm) severely distorting the left retroperitoneum and occupying the normal location of the left kidney (arrow).

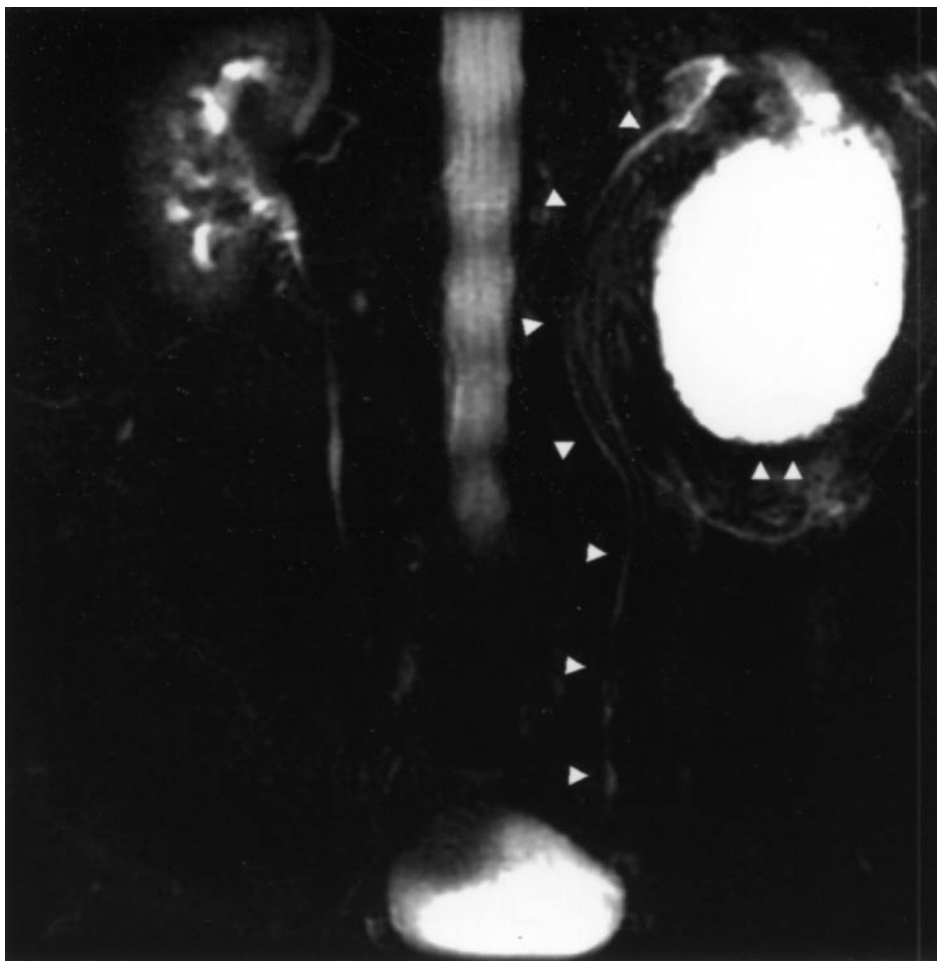


Fig. 3. MRI with enhancement shows the ureter of the left upper pole kidney (arrowheads) and hydronephrosis without ureteral enhancement of the left lower pole kidney (double arrowhead). The ureteropelvic junction of the upper pole was compressed by hydronephrosis of the lower pole.