



Emphysematous pyelonephritis presenting to the emergency department with flank pain

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1. Discussion

Emphysematous pyelonephritis (EPN.) is a rare gas-producing necrotizing infection that includes the renal parenchyma and surrounding tissues. It is associated with high mortality and morbidity.¹ EPN is a disease with a high risk of infection in urethral obstruction and DM populations, most commonly in women. A high tissue glucose level can provide a suitable environment for bacterial growth that produces gas in patients with diabetes.² Using imaging techniques, especially tomographs; leads to early diagnosis and reduced emphysematous pyelonephritis deaths. However, the consequences of serious cases are poor and require aggressive emergency treatment. In addition to percutaneous and surgical drainage with systemic antibiotic therapy, radical nephrectomy is a viable treatment option.³

2. Visual case discussion

The patient was referred to the emergency room from the outer center with the complaint of right flank pain. For a few days he had side pain, nausea, vomiting and burning while urinating. There was no comorbid disease other than Diabetes mellitus (DM) in his history. Their vitals were stable and their body temperature was 36.6 °C. In the physical examination, no pathology other than costovertebral angle sensitivity and diffuse tenderness was detected. Glasgow coma scale was 15. Laboratory blood testing revealed creatinine: 1.4 mg / dl, C-reactive protein: 194 mg / l, WBC: $5.57 \times 10^3 / \mu\text{l}$, blood glucose: 613.53 mg / dl, Urea: 56.38 mg / dl. In the blood gas pH was 7.214, pCO₂: 50.6 mmHg, pO₂: 30.5 mmHg, and HCO₃: 16 mmol / l. Urinalysis revealed ketone +

positive in the urine, leukocyte ++ positive in the urine, On abdominal tomography, the right kidney ureter had stone and emphysematous pyelonephritis (EPN)-compatible abscess and diffuse air appearance (Fig. 1). These findings of necrotizing renal parenchyma with intraparenchymal gas led to the diagnosis of EPN. Fluid hydration and insulin infusion for diabetic ketoacidosis were initiated in the emergency department. Related departments were consulted. The patient was admitted to the urology clinic with the diagnosis of EPN Fig. 1.

3. Questions and answers with a brief rationale

3.1. Questions

- 1 What is the most common factor associated with the development of emphysematous pyelonephritis?
- A Drug abuse,
 - B Neurogenic bladder,
 - C Alcoholism
 - D Anatomic anomaly
 - E Uncontrolled diabetes mellitus

Answer: E. Diabetes mellitus is the single most common associated factor. Up to 95% of patients with EPN have underlying uncontrolled diabetes mellitus. Other reported factors associated with the development of EPN are drug abuse, neurogenic bladder, alcoholism and anatomic anomaly.¹

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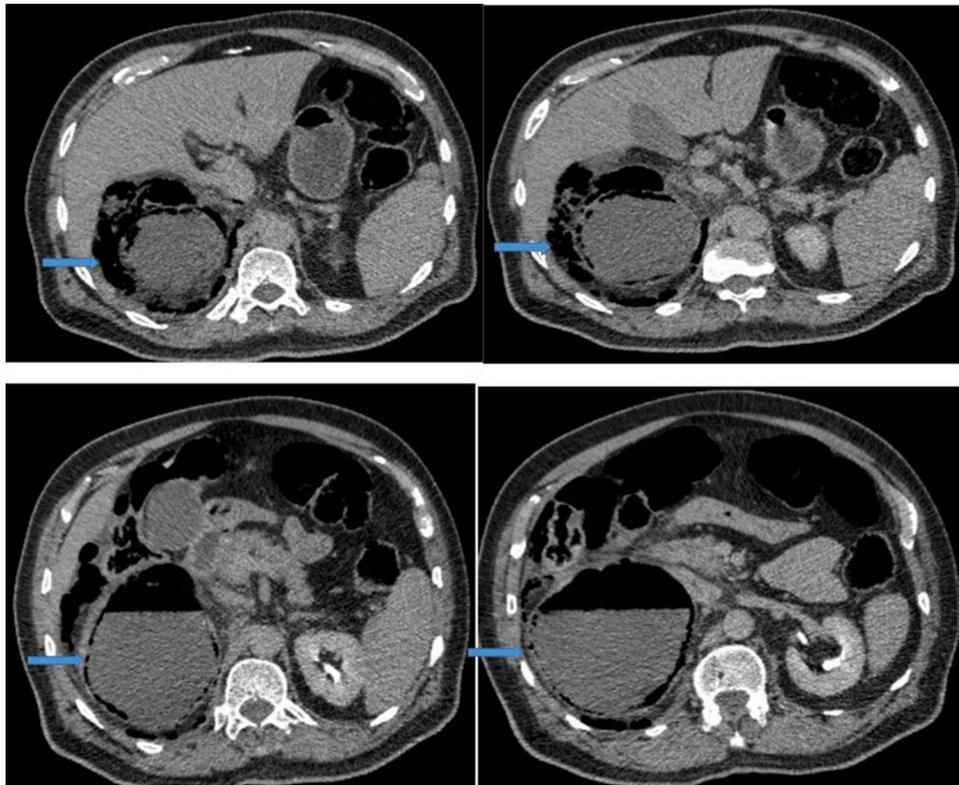


Fig. 1. Abscess and air compatible view in the abdominal tomography taken (Blue arrows). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

1 Requires radical nephrectomy in all cases of emphysematous pyelonephritis.

- A Right
- B False

Answer: B. It may not require radical nephrectomy in all patients. However, the consequences of serious cases are poor and require aggressive emergency treatment. In addition to percutaneous and surgical drainage with systemic antibiotic therapy, radical nephrectomy is a viable treatment option.³

Declaration of Competing Interest

The authors declare that they have no conflict of interest.

References

- 1 Ubee SS, McGlynn L, Fordham M. Emphysematous pyelonephritis. *BJU Int.* 2011;107(9):1474–1478.
- 2 Khaira A, Gupta A, Rana DS, Gupta A, Bhalla A, Khullar D. Retrospective analysis of clinical profile prognostic factors and outcomes of 19 patients of emphysematous pyelonephritis. *Int Urol Nephrol.* 2009;41:959–966.
- 3 Ziegel Müller BK, Szabados B, Spek A, Casuscelli J, Stief C, Staehler M. Emphysematous pyelonephritis: case report and literature overview. *Urologia.* 2018;85(3):123–126.