



Medical Imagery

## Emphysematous Cystitis in a Female Diabetic Patient

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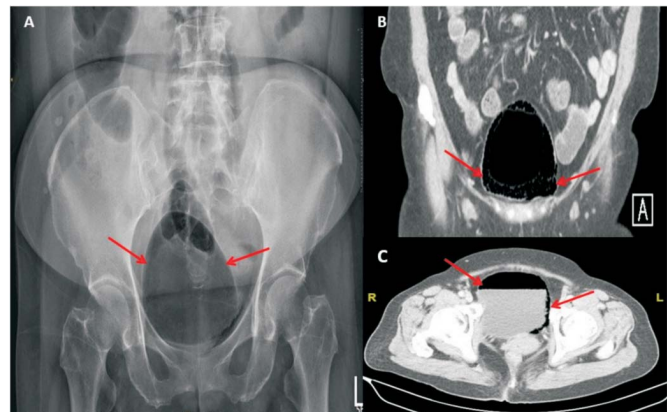
A 78-year-old woman presented to the emergency department with lower abdominal pain and dysuria for 5 days. She had a history of hypertension and diabetes mellitus with irregular control. Physical examinations revealed lower abdominal pain without rebound tenderness. Laboratory tests showed blood sugar levels of 223 mg/dL, HbA1c of 8.8%, white cell count of 15630/ $\mu$ L, with neutrophil 92%, with all other parameters in the normal ranges. Urine analysis revealed RBC 901/HPF, WBC 39/HPF. Abdominal radiograph revealed gaseous distension of the urinary bladder (Figure 1A). Computed tomography (CT) of the abdomen revealed gas inside the urinary bladder and bladder wall indicative of emphysematous cystitis (Figure 1B and C). A urethral Foley catheter was inserted and empirical antibiotics (ceftriaxone) were administered with glycemic control. The two sets of blood cultures were negative. Urinary culture resulted in the identification of ceftriaxone-sensitive *Escherichia coli*. Her symptoms improved with treatment and she was discharged 11 days after admission.

Emphysematous cystitis (EC) is a rare form of complicated urinary tract infection (UTI) characterized by gas inside the bladder and in the bladder wall.<sup>1</sup> The exact mechanisms for EC is not well understood. Some hypothesis that high glucose levels provide an environment favorable for gas-forming organisms such as *E. coli*. Although it is difficult to distinguish EC from uncomplicated UTI, it should be noted that the former occurs mainly in diabetic patients.<sup>2</sup> Other predisposing risk factors include old age, bladder outlet obstruction, chronic UTI, neurogenic bladder, chronic indwelling bladder catheters, and immune deficiency.<sup>3,4</sup> Early medical treatment comprising adequate bladder drainage, glycemic control, and appropriate antibiotics can contribute to achieving a favorable outcome.<sup>5</sup>

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**Figure 1.** A. Plain radiograph shows gaseous distension of the urinary bladder (red arrows). B and C. CT scan of the abdomen shows gas inside the urinary bladder and bladder wall (red arrows).

### References

1. Stein JP, Spitz A, Elmajian DA, et al. Bilateral emphysematous pyelonephritis: a case report and review of the literature. *Urology*. 1996;47(1):129–134.
2. Grupper M, Kravtsov A, Potasman I. Emphysematous cystitis: illustrative case report and review of the literature. *Medicine (Baltimore)*. 2007;86(1):47–53.
3. Thomas AA, Lane BR, Thomas AZ, et al. Emphysematous cystitis: a review of 135 cases. *BJU Int*. 2007;100(1):17–20.
4. Eken A, Alma E. Emphysematous cystitis: the role of CT imaging and appropriate treatment. *Can Urol Assoc J*. 2013;7(11–12):E754–E756.
5. Wu CJ, Ke YC. Emphysematous cystitis during treatment of suspected nonconvulsive status epilepticus in type 2 diabetic patient. *Int J Gerontol*. 2011;5(2):123–125.