Emphysematous Cystitis

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Emphysematous cystitis is an unusual infectious disease of the urinary bladder characterized by gas collection within the wall and lumen of the urinary bladder. Computed tomography is a good imaging modality for diagnosing emphysematous cystitis. Early diagnosis is crucial, and most cases respond well to conservative treatment with aggressive antimicrobial therapy and bladder catheterization.

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1. Clinical Presentation

An 82-year-old man visited the emergency room of our hospital because he had been suffering from fever and chills for several days. In the emergency room, a high fever of up to 39.5°C was noted. Physical examination revealed tenderness without rebounding pain over his lower abdomen. Laboratory examination showed leukocytosis (17,500/mm³), pyuria, hematuria, and high C-reactive protein (16.85 mg/dL).

A Foley catheter was inserted into the lumen of the urinary bladder. Computed tomography (CT) of the abdomen revealed diffuse intramural gas in the urinary bladder, a large amount of gas in the lumen of the urinary bladder, and minimal perivesical fat stranding. A diagnosis of emphysematous cystitis was made (Figure 1). Mild bilateral hydronephrosis and hydroureter were also noted.

He was then transferred to our ward for further evaluation and management. He had diabetes mellitus that was under medical control. He also suffered from an old

Figure 1  Computed tomography of the bladder shows gas collection within the wall and lumen of the bladder: (A) axial view; (B) coronal view. A diagnosis of emphysematous cystitis was made. The Foley catheter can be seen within the bladder lumen.
cerebrovascular accident which resulted in left hemiparesis. After admission, urine culture showed growth of *Escherichia coli*, but blood culture showed no bacterial growth. Intravenous administration of antibiotics was given, and continuous Foley catheterization was performed. The fever subsided, tenderness of the lower abdomen was not noted, and the white blood cell count in the blood returned to normal.

Follow-up abdominal CT 8 days later showed no evidence of emphysematous cystitis, and no bilateral hydronephrosis or hydroureter (Figure 2). He was discharged in a stable condition, and outpatient department follow-up was recommended.

2. Discussion

Emphysematous cystitis is an unusual infectious disease of the urinary bladder that is characterized by gas collection within the wall and lumen of the urinary bladder. More than 50% of cases of emphysematous cystitis have diabetes mellitus; other risk factors include bladder outlet obstruction, neurogenic bladder, and patients receiving immunosuppression therapy.1–5 The usual clinical symptoms are fever, chills and lower abdominal pain. Pyuria, hematuria and leukocytosis are also usually noted. *E. coli* is the causative organism in most cases, but *Aerobacter aerogenes, Klebsiella pneumoniae* and *Candida albicans* have also been reported.2,4,6 The imaging diagnosis of emphysematous cystitis is based on gas within the wall and lumen of the urinary bladder. Plain film of the abdomen and ultrasonography are the first-line imaging modalities to diagnose emphysematous cystitis. But CT is a better imaging modality with high sensitivity and specificity, and it can also define the severity and extent of the emphysematous cystitis.4,5,7 Early diagnosis is crucial, and most cases respond well to conservative treatment with aggressive antimicrobial therapy and bladder catheterization. Surgical debridement should be considered if there is poor response to conservative treatment.

References