Emphysematous Cystitis

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BRIEF HISTORY

An 83 year-old woman with a history of diabetes mellitus presented to our emergency department with fever (38.5℃), low abdominal pain, frequency and gross hematuria. Urinalysis demonstrated marked hematuria and pyuria. The hemogram revealed leukocytosis and a shift to the left. Biochemistry study revealed a creatinine level of 0.5 mg/dL, and C-reactive protein level of 1.029 mg/dL. High levels of blood glucose (>300 mg/dL) and a HbA1C of 8.6% were noted under management with oral anti-hyperglycemic agents and insulin. Excretory urography (Fig. 1A) and computed tomography (Fig. 1B) showed a layer of submucosal air densities diffusely distributed in the wall of the urinary bladder, and a diagnosis of emphysematous cystitis (EC) was made. Peripheral blood and urine cultures yielded *Escherichia coli*, sensitive to cephradine. She recovered well after treatment with a urethral indwelling catheter and parenteral antimicrobial therapy with cephradine 1 g every 6 h for five days. After discharge, she received an oral antimicrobial agent, Keflex 500 mg every 6 h for seven days without relapse of infection.

EC is a rare infection characterized by gas in and around the bladder wall [1]. The median age of patients is 66 years and women have a higher incidence than men man at a ratio of 1.8:1. Two-thirds of patients with EC have diabetes mellitus [2].

Most cases are diagnosed by plain radiographs of the abdomen. However computed tomography has become the primary image facility recently [2]. *Escherichia coli* is the most prevalent pathogen (57%), followed by *Klebsiella pneumoniae* (21%). Almost 90% of patients are treated successfully with medical treatment alone including antibiotics, bladder drainage and glycemic control [2,5]. First-generation cephalosporins can be used as empirical antimicrobial agents. Less than 10% patients require surgical treatment for severe necrotizing infections. Surgical intervention is used only in cases of stones, urinary tract obstruction, perivesical abscess formation, and complications such as peritonitis and sepsis [4]. If surgery is necessary, the clinical outcome is related to age, leukocytosis, shock, renal function impairment, and coagulopathy.

Surgery involves a partial cystectomy, cystectomy or debridement according to the severity [2,3]. Patients with EC with upper urinary tract involvement, especially emphysematous pyelonephritis, have increased mortality and morbidity rates.

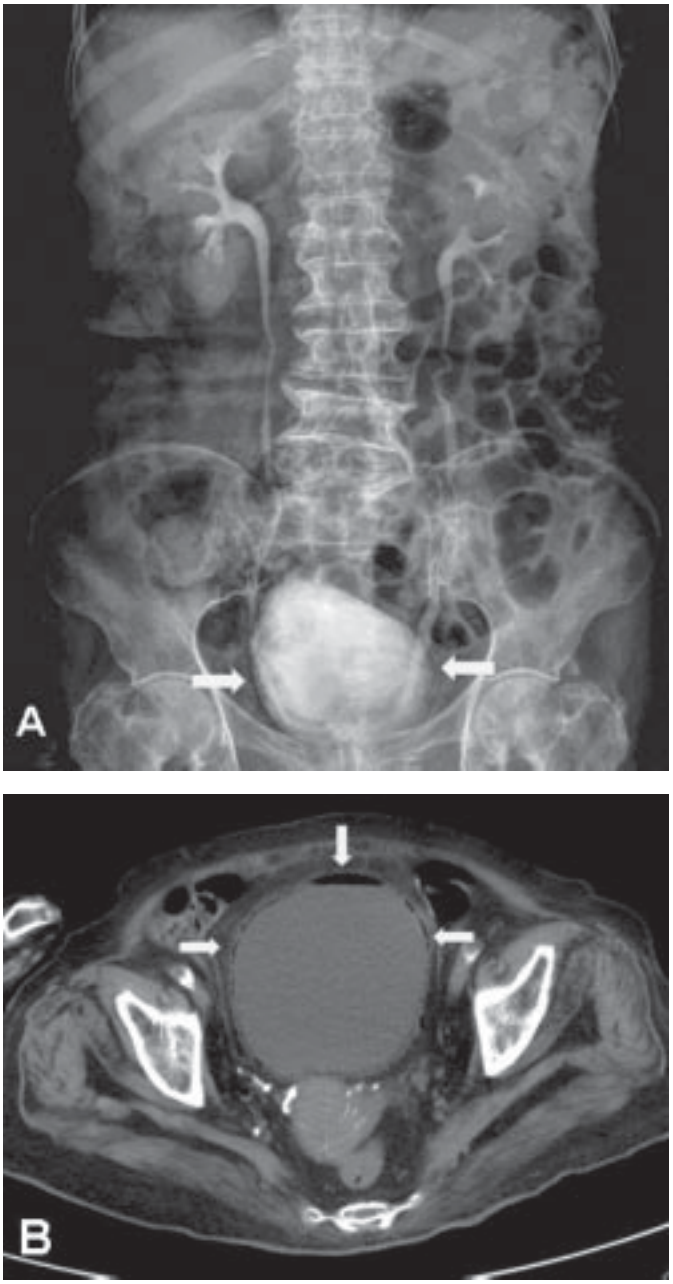

Fig. 1. (A) Excretory urography shows abnormal pneumatosis of the urinary bladder wall (arrow). (B) Computed tomography shows a thin layer of submucosal air densities diffusely distributed in the wall of the urinary bladder with normal distension (arrow).

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