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Internal Medicine Flashcard

Beware of the air when diabetes is there

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1. Case description

A 73-year-old woman with past history of dementia and type 2 *diabetes mellitus* (DM) was admitted to the emergency department because of drowsiness and hyperglycaemia. The capillary blood glucose was 335 mg/dL and capillary ketone levels were in the normal range. Physical examination was unremarkable. During hospital stay, she developed fever (38.9°C). The laboratory tests revealed leucocytosis (white blood cell count of 16.25 × 10^9/L) with neutrophilia and a C-reactive protein of 3.61mg/dL. The liver function panel revealed cytolysis and cholestasis. Leucocyte esterase was strongly positive in urinalysis. An abdominopelvic computed tomography (CT) was ordered. The main finding was the presence of gas within the bladder lumen (Fig. 1). What is the diagnosis?

2. Discussion section

The CT-scan images show one of the characteristic findings of emphysematous cystitis (EC) – gas within the bladder lumen [1,2]. Another typical finding is gas within the bladder wall [1,2].

EC is a rare complication of urinary tract (UT) infection, with a mortality rate of 3-12% [1]. It typically affects elderly women with DM [1,2].

Poorly controlled DM contributes to the development of EC as gas is produced by natural fermentation of glucose by some microorganisms in the UT [1]. *Escherichia coli* and *Klebsiella pneumoniae* are the most common causative agents identified in urine cultures [1].

As the clinical presentation of EC is wide-ranging, from asymptomatic to septic shock, imaging plays a crucial role in the diagnosis

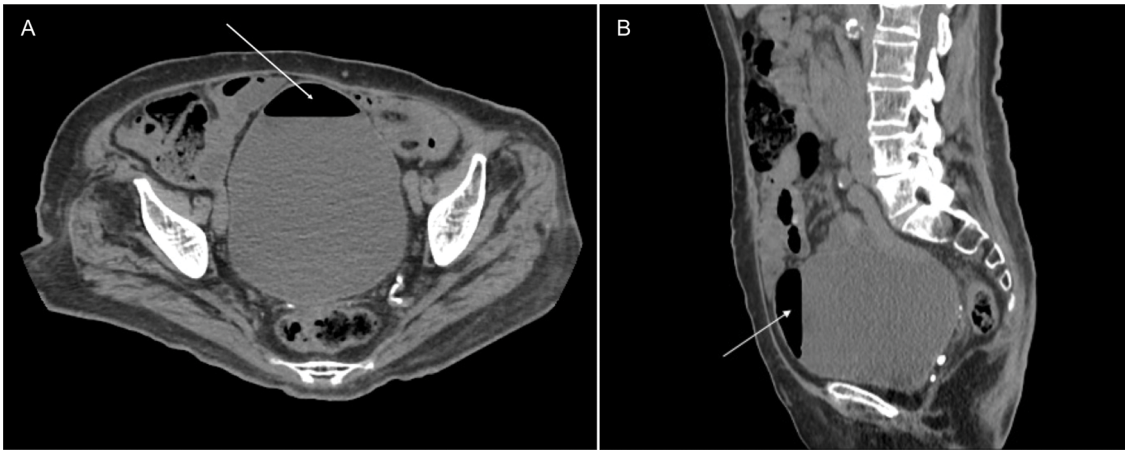

Fig. 1. (A, B) Axial and sagittal views of CT-scan images showing gas within the bladder lumen (white arrows).

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[1,2]. For this reason, clinicians should maintain a low threshold for ordering imaging exams, CT-scan being the gold-standard [3]. The radiological diagnosis should lead to the prompt onset of antibiotic therapy, a key factor to minimize the likelihood of an adverse outcome. A delay in diagnosis and treatment can result in the development of bladder rupture, emphysematous pyelonephritis, sepsis and death [1,3].

In this case, *Escherichia coli* was isolated from urine culture and pneumaturia was present at the time of bladder catheterization (a highly specific finding, observed in 70% of patients with EC submitted to the procedure) [1]. The patient began to improve after several days on parenteral ceftriaxone.

Declarations of Competing Interest

None.

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