

EMPHYSEMATOUS CYSTITIS – A CASE REPORT

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INTRODUCTION

Emphysematous cystitis was first reported in a living human in 1932¹. In 1961 Bailey proposed that emphysematous cystitis be used to describe gas collections within the bladder wall and lumen secondary to infecting microorganisms. He suggested that primary pneumaturia (intraluminal gas) and emphysematous cystitis (intramural gas) should be considered different manifestations of the same disease².

Initially believed to be a rare disease, more than 150 cases of emphysematous cystitis have been reported³. We herein describe the case of an elderly male patient who presented to our institution with emphysematous cystitis.

CASE REPORT

A 55-year-old male presented with acute retention of urine, fever with chills and rigors for three days. He also had a history of pyuria and poorly controlled diabetes.

On examination of the abdomen there was a palpable suprapubic lump with minimal tenderness. It was resonant on percussion. Otherwise, the abdomen was normal. Per-rectal examination showed a grade-1 prostate. Per-urethral catheterization was attempted but failed as there was resistance at the bulbar urethral level. Emergency ultrasound examination revealed gas in the lumen and in the wall of the urinary bladder, appearing as echogenic foci with dirty shadowing (Fig. 1). As this led to the suspicion of bowel adhering to the bladder wall we proceeded to do CT scan immediately instead of suprapubic cystostomy. CT scan showed gas in the lumen and in the bladder wall at which point a diagnosis of emphysematous cystitis was made (Fig. 2). We then performed percutaneous suprapubic cystostomy and drained 450 cc. of purulent urine.

Blood analysis revealed the following values: hemoglobin 11.3 gm%, total leucocyte

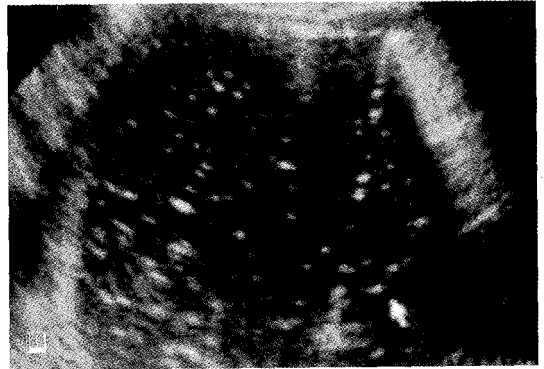


Fig. 1: Ultrasound image showing "dirty shadowing" due to gas in the lumen and in the urinary bladder wall

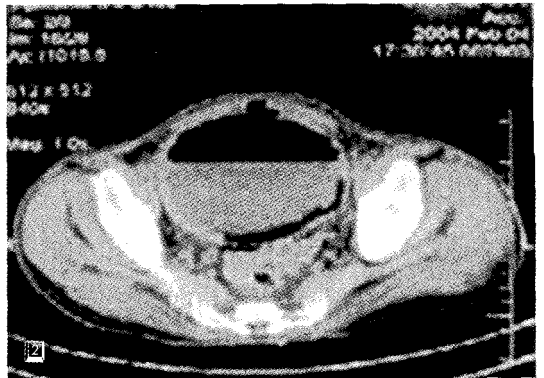


Fig. 2: CT scan showing gas in the lumen and urinary bladder wall

count 13600 cells/cc³, polymorphs 66%, lymphocytes 33%, eosinophils 1%, random blood sugar 342 mg% and serum creatinine 1.3 mg%.

On urine analysis and microscopy plenty of pus cells, bacteria and sugar were found. Urine culture yielded a significant growth of *E.coli* sensitive to aminoglycosides.

The patient was administered Cefotaxime, Amikacin and Metronidazole. Diabetes was controlled by insulin.

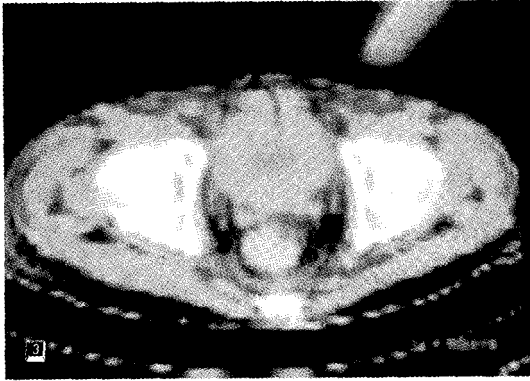


Fig. 3: CT scan showing resolution of the gas following suprapubic cystostomy

A repeat CT scan was done after 5 days and showed complete resolution of the gas (Fig. 3).

Once the patient was infection-free, he was subjected to a micturating cystourethrogram and a retrograde urethrogram which showed a bulbar urethral stricture. It was treated by optical urethrotomy. The patient's follow-up was uneventful.

DISCUSSION

In Bailey's series, the incidence of diabetes mellitus was high. Other underlying or precipitating causes included cystoscopy, penetrating injury to the bladder, presence of a vesicovaginal fistula, urinary stasis secondary to benign or malignant prostatic hypertrophy, neurogenic bladder and vesical diverticula.

Emphysematous ureteritis, nephritis and adrenalitis may coexist with emphysematous cystitis⁴. The extension of gas up to the kidneys and adrenals is accompanied by an appreciable mortality rate⁵.

Like our patient, emphysematous cystitis patients may complain of irritative voiding symptoms or they may be asymptomatic. They may only have symptoms of primary disease⁶. The patients usually are elderly, but emphysematous cystitis has also been reported in infants¹.

E.coli and *Enterobacter aerogenes* are the most common organisms isolated but other organisms such as *Proteus mirabilis*, *Staph. aureus*, *Streptococci*, *Clostridium*, *Nocardia*

and *Candida albicans* have also been associated with emphysematous cystitis³. Bacterial fermentation of glucose in urine creates CO₂ gas in the submucosa or lumen of the bladder².

On abdominal x-ray gas can be seen around the bladder wall and within the bladder giving a cobblestone or beaded-necklace appearance¹. Ultrasonography shows diffuse wall thickening with irregular foci associated with acoustic shadowing⁷. CT scan is needed to confirm the presence and extent of gas⁸. Cystoscopy reveals acute cystitis with vesicles of various sizes³.

Management consists of early diagnosis and treatment of the primary condition². Treatment of diabetes, administration of appropriate antibiotics and adequate bladder drainage are essential³. Most of the cases resolve on this conservative regimen, but rarely, patients progress to life-threatening severe necrotizing cystitis requiring cystectomy⁶.

In conclusion, emphysematous cystitis is a relatively uncommon infectious condition which usually presents in patients who have associated co-morbid conditions like diabetes mellitus. The clinical presentation may range from asymptomatic to fulminant sepsis. Presence of resonance on suprapubic percussion is a valuable bedside sign. Confirmation can be made by X-ray of the pelvis, ultrasound of the bladder and CT scan of the abdomen. Treatment consists of aggressive antibiotics, prompt control of diabetes and continuous urinary drainage.

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