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Emphysematous cystitis: a case report and review of the literature

Steven R. Bruhl [1*], Amanda Nahhas [1], Mujeeb Sheikh [1], Terrence J. Horrigan [1]

[1] University of Toledo Medical Center, Toledo, Ohio, USA

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ABSTRACT

The diagnosis of emphysematous cystitis is made when gas is visualized within the bladder wall on radiologic or ultrasound imaging and typically develops as a complication of lower urinary tract infection from gas forming bacteria. Its presentation varies from being asymptomatic to severe abdominal pain and requires a high index of suspicion in susceptible individuals to make the diagnosis and avoid potentially serious complications. Here we present a case of emphysematous cystitis along with a brief review of the literature.

▸ *Implication for health policy/practice/research/medical education:*
One of the very rare cases of cystitis is discussed in this case report. We recommend reading this article to urologists and radiologists.

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Background

Emphysematous cystitis (EC) is a rare bacterial infection of the lower urinary tract which results in gas formation in the bladder wall, lumen, and surrounding tissues. The gas formation within the urinary tract and luminal mucosa is generally a product of glucose or albumin fermentation with the production of carbon dioxide by the pathogen (1). Presentation can be quite variable ranging from asymptomatic to nausea, fever, chills, emesis, dysuria, pneumaturia, and abdominal pain (2-4). Here we present a unique case of emphysematous cystitis in a female complaining of severe suprapubic pain and the persistent impression that her bladder was "falling out."

Case presentation

An 84 year old female presented to the emergency room complaining of severe lower abdominal pain that had progressively worsened over the last 7 days. Although the pain initially began as burning with urination, her symptoms escalated to a constant and severe pelvic pressure-like pain and the persistent impression that her bladder was "falling out" of her vagina. Pertinent past medical history included chronic urinary incontinence secondary to a neurogenic bladder and a known cystocele of 2 years duration. Physical exam revealed severe suprapubic tenderness on palpation without rebound tenderness and pelvic examination revealed evidence of a cystocele approximately 2 cm from the vaginal introitus. CT scan of the abdomen and pelvis with contrast revealed air both within the bladder as well as air within the bladder wall consistent with emphysematous cystitis *(Figures 1 & 2)*. Management of the case patient included bladder drainage with a foley catheter, aggressive pain management with 7 mg of morphine over approximately 90 minutes, and empiric ciprofloxacin 400mg IV every 12 hours. Her urine culture ultimately grew Escherichia coli that was sensitive to ciprofloxacin and her condition rapidly improved. On day 3 she was discharged with a prescription for an additional seven days of oral antibiotics and made a full recovery.

Discussion

Emphysematous cystitis is a rare clinical disorder with

* *Corresponding author at:* Steven R. Bruhl, 420 E. Dudley St, Maumee, OH 43537, USA.

E-mail address: steven.bruhl@utoledo.edu

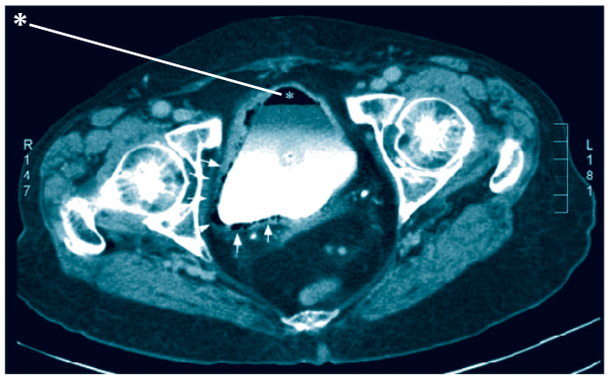

Figure 1. A transverse CT scan of the pelvis with intravenous contrast at the level of the humoral heads showing a thickened bladder wall with intraluminal (*) and intraluminal air (arrows) consistent with emphysematous cystitis.

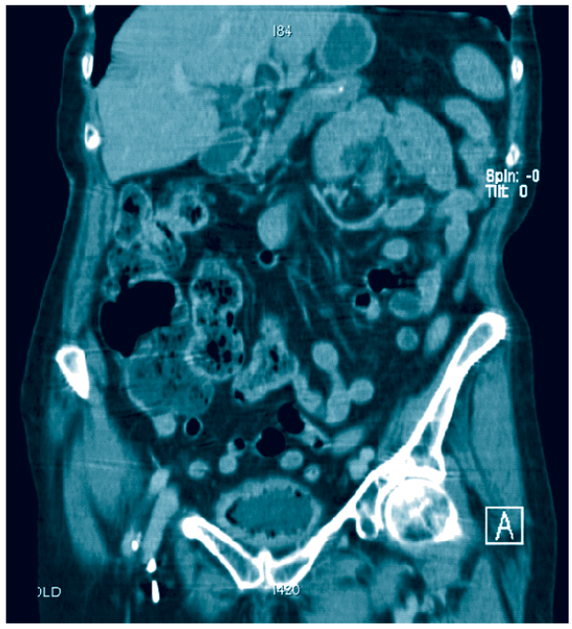

Figure 2. A Coronal CT without intravenous contrast showing a thickened bladder wall with intramural air (arrows) consistent with emphysematous cystitis.

non-specific clinical symptomatology. It predominantly affects middle-aged women with comorbid disorders including diabetes mellitus or immunocompromised hosts, but can also occur in healthy individuals. Other predisposing factors to EC include chronic UTIs, indwelling urethral catheters, urinary tract outlet obstruction, or as in the case patient, a neurogenic bladder (5, 6). The most common pathogen that causes EC is Escherichia coli (58%), followed by Klebsiella pneumonia (21%) as well as Enterobacter spp, Clostridium spp and rarely candida (5). Although the disease might be suspected based on history and physical, definitive diagnosis is usually made on plain radiographs or CT scans of the abdomen when air is visualized within the walls of the bladder. Although the incidence of EC is felt to be relatively rare, the true incidence is unknown due to the fact that the diagnosis usually requires radiographic imaging yet imaging is rarely indicated or performed in patients presenting with uncomplicated symptoms of UTI's (1). Treatment strategies vary with the severity of the infection, but generally include complete bladder drainage through the placement of a foley catheter, aggressive glycaemic control, hydration, and broad spectrum antibiotics covering the most common offending microorganisms (5). In severe cases where the infection has migrated from the bladder to the renal parenchyma, more aggressive treatment including urinary drainage via cystectomy or nephrostomy tube placement may be required (1, 2). In conjunction with antibiotic and hydration, hyperbaric oxygen therapy has also shown to be an effective treatment for EC (5). Surgical therapy is rarely indicated except when an anatomical abnormality or a stone is causing obstruction. Delayed diagnosis can lead to bladder rupture, ascending pyeolonephritis and/or septicemia.

Conclusion

This case highlights the wide variability of presenting symptoms in emphysematous cystitis. Although most physicians would consider a urinary tract infection in the differential diagnosis and prompt urinalysis, without imaging the exact diagnosis and disease severity could not have been known. Thus, although EC remains relatively rare, a high level of clinical suspicion in susceptible individuals and a low threshold for follow up imaging is required in order to correctly diagnose and avoid potentially serious complications.

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Conflict of interest

None declared.

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