International Journal of
Case Reports & Short Reviews

Case Report

Emphysematous Cystitis Due to Community Acquired *E. coli*

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Submitted: 28 November 2020; **Approved:** 07 December 2020; **Published:** 08 December 2020

Cite this article: Najar RR. Emphysematous Cystitis Due to Community Acquired E. coli. Int J Case Rep Short Rev, 2020 Dec 08; 6(11): 082-084. doi: 10.37871/ijcrsr.id91

ISSN: 2638-9355

ABSTRACT

Emphysematous cystitis is an uncommon infectious disease seen most commonly in diabetic patients and also in other immunocompromised disease states. It is characterized by accumulation of gas with bladder wall by gas forming organisms. We present a case of an elderly female who presented with abdominal pain associated with nausea and vomiting with unremarkable physical examination except for Non-proliferative diabetic retinopathy with imaging revealing intramural gas with cobblestone appearance in bladder. She was managed with broad spectrum antibiotics initially with pepracillin and Tazobactum later she was shifted to imepenum based on culture sensitivity. We report a Case of *Emphysematous cystitis* which is a *Rare disease* most commonly seen in diabetics and is caused by community acquired *E Coli.*

INTRODUCTION

Emphysematous cystitis is a rare clinical condition and is a severe infection of the urinary bladder produced by gas forming organisms most commonly by *E coli* [1]. Mostly patients present with pain abdomen however presentation may be atypical. It is most commonly seen in patients with Diabetes mellitus, however other known risk factors involved in its causation include neurogenic bladder, urinary tract outlet obstruction, indwelling urethral catheters, and immune-deficiency [2]. Early diagnosis and broad spectrum antibiotics help in early recovery of patients and improve survival [3]. We report a rare case of elderly female who presented with abdominal pain with poorly controlled diabetes with high clinical suspicion was found to have *E coli* emphysematous cystitis that resolved with antibiotic treatment and she was attached to endocrinology department for proper follow up and control of diabetes.

CASE DESCRIPTION

A 65 year old woman with uncontrolled diabetes presented to the emergency department with a 5 day history of lower abdominal pain. She also had fever, nausea and vomiting. Physical examination revealed lower abdominal tenderness. Her fundus revealed non proliferative diabetic retinopathy, with loss of vibration sense .Rest of the examination was unremarkable. Table 1 depicts her laboratory examination.

From the clinical scenario and laboratory examination showing leukocytosis with renal failure. The urinary examination revealing full field pus cells. And with this we made a clinical impression of pyelonephritis. Ultrasonography of abdomen showed diffuse bladder wall thickening with increased echogenicity. Also we found gas within bladder wall as is shown in plain radiograph (a). Non-contrast Computed Tomography (b) of abdomen revealed intramural gas with a cobblestone or beaded appearance. This condition is called as *Emphysematous Cystitis.*

The patient was treated with broad-spectrum antimicrobial agents (pepracillin and Tazobactum) and placement of a Foley catheter. Subsequently, a urine culture was positive for *E coli* the patient was treated with meropenum (500 mg IV 12 hrly) for 10 days, Amikacin (500 mg IV Stat dose) and Ciprofloxacin 250 mg IV 12 hrly for a week. Patient recovered uneventfully. His creatinine settled on 5th day of admission and he was discharged on day 7th. He was asked to take Meropenum 500 mg thrice a day per oral for a week (total duration of treatment 14 days). Catheter was removed immediately after normalization of creatinine. Patient was discharged and was attached to endocrinology department for proper control of blood glucose.

DISCUSSION

Emphysematous cystitis was first reported by Hueper in 1926 [4]. Emphysematous cystitis is a rare and life threatening severe lower Urinary Tract Infection (UTI) which is characterized by the accumulation of gas in and around the bladder wall produced by bacterial or fungal fermentation [5]. *E coli* is accounts for about 60% of cases followed by Klebsiella pneumoniae, Pseudomonas aeruginosa, Proteus mirabilis [6]. It has varied presentations ranging from asymptomatic to nausea, fever, chills, emesis, dysuria, pneumaturia, and abdominal pain [7-9] to severe peritonitis or septic shock. It is most commonly seen in elderly, female gender and most commonly in diabetics. It has also been seen in transplant recipients [10]. Emphysematous cystitis requires aggressive treatment with parenteral antibiotics, bladder drainage and control of sugar level and the overall average mortality rate is approximately 7% It is important

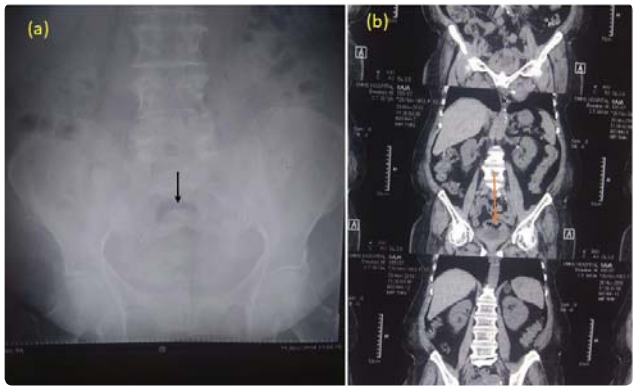

Figure 1: A plain radiograph (a) and a Computed Tomography (b) of Abdomen.

Table 1: Hematological parameters and other laboratory indices.

Parameters	Day1	Day3	Day5
Hb gm/dl	13.7	12.7	13.0
TLC per mm^3	18600	12700	8700
plt per mm^3	199	164	167
Urea mg/dl	74	64	43
Creatinine (mg/dl)	1.54	1.17	0.87
Bilirubin mg/dl	0.4	-	-
Ast U/L	16	-	-
Alt U/L	11	-	-
Albumin g/dl	2.4	-	-
ALP	104	-	-
Urinary Albumin	++	+	-
Urinary wbcs/HPF	90-100	-	20-30
Blood glucose (F) mg/dl	595	178	133
HBAIC	6.8%	-	-
Fundus Examination	NPDR B/E	-	-

DOI: https://dx.doi.org/10.37871/ijcrsr.id91

to differentiate emphysematous cystitis from emphysematous pyelonephritis because of increased mortality associated with later and generally requires nephrectomy. The surgical intervention is rarely needed in emphysematous cystitis except when an anatomical abnormality like an obstruction or stone is present. The radiographic imaging is necessary for the diagnosis of emphysematous cystitis, an abdominal plain film at the minimum should be ordered if the disease is suspected in diabetic patients or in cases of UTIs with unusual presentations. Plain radiographs of the abdomen reveal radiolucency within the lumen of the bladder as a ring of radiolucency outlining the bladder wall. Computed tomography of the abdomen is superior to plain radiographs as a diagnostic tool because it clarifies the extent and location of the gas collection as observed in our case [11]. Most cases can be treated with broad spectrum antibiotics, bladder drainage and proper glycemic control. The prognosis of emphysematous cystitis can be rather serious due to the therapeutic failures which can occur when there is an ignorance of the physiopathological mechanisms of emphysematous cystitis. Actually, the prognosis in the case of emphysematous cystitis remains good provided that it is diagnosed in time and that an effective treatment is started without any delay [12-14].

CONCLUSION

In summary, Emphysematous cystitis is rare disease entity. A high clinical suspicion and prompt diagnosis is mandatory to help prevent urosepsis. Also both blood and urine culture is a must for guiding treatment. This helps in improving survival.

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DOI: https://dx.doi.org/10.37871/ijcrsr.id91