

CASE REPORT

Synchronous Emphysematous Pyelonephritis and Emphysematous Cystitis - A Rare Clinical Entity

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Abstract

Concomitant emphysematous pyelonephritis (EP) and emphysematous cystitis (EC), is a rare potentially life-threatening condition. The Current case report stress upon the early detection and appropriate treatment of emphysematous pyelonephritis and emphysematous cystitis, to avoid the potential morbidity and mortality associated with this infection

Key Words

Concomitant Emphysematous Pyelonephritis (EP, Emphysematous Cystitis (EC), Urology

Introduction

Concomitant emphysematous pyelonephritis (EP) and emphysematous cystitis (EC), is a rare potentially life-threatening condition. Patients with diabetes mellitus have a higher incidence of bacteriuria and pyelonephritis, cystitis as the hyperglycemia and ketoacidosis impairs host cellular defenses and protects bacteria from the bactericidal activity of lactic acid (1).

Case Report

We present a case of 50years old Type 2 diabetic, female presented with history of generalized weakness, fever, dysuria, and reduced appetite of one week duration. General examination revealed pallor, and suprapubic tenderness. Her laboratory evaluation revealed fasting blood sugar of 300mg/dl; serum creatinine of 3mg/dl and raised total blood counts. Urine microscopy showed numerous pus cells and the urine culture had E. coli (105colony count). Ultrasound (USG) revealed right kidney of 11.5x 3cm and left kidney 11.7x 5.9 cm with bilateral small air pockets within the renal parenchyma and air in the intramural region of urinary bladder. There was no hydroureteronephrosis. Plain KUB revealed

Bilateral air pockets in the renal region with hypodense area around the region of urinary bladder suggestive of (emphysematous pyelonephritis with concomitant emphysematous cystitis (*Fig.1, 2a & 2b*). She was treated with catheterization, I/V fluids and I/V antibiotics (broad-spectrum antibiotic followed by culture sensitive antibiotic for 21 days). Her blood sugar was controlled using insulin in consultation with the endocrinologist. To this, the patient responded well.

Discussion

Gas within the urinary tract was initially described in 1671, in the case of a man presenting with pneumaturia (2). Though a lot has been reported regarding emphysematous pyelonephritis (EP), emphysematous cystitis (EC) is a rare clinically entity. Combination of emphysematous pyelonephritis concomitant with EC is even rarer. Bailey coined the condition EC in 1961 as 'cystitis emphysematous' (3). The management of EP and EC depends on the severity of the illness. The treatment generally consists of antibiotics, renal de-obstruction, bladder drainage, and glycaemic control with

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Fig.1 Plain KUB Showing Air Pockets in the Renal Area



Fig.2b Plain KUB Showing Air Pockets in the Vesical Region (Post void)

correction of any underlying comorbid disorders. Broad-spectrum antibiotics are used initially. The precise regimen is then tapered to the sensitivities of the urinary pathogens. Patients not responding to medical management or those with severe necrotizing infections might require partial cystectomy, cystectomy, or surgical debridement (nephrectomy) (10%) (4).

It is commonly seen in diabetic, immunocompromised patients. Several theories on the pathogenesis of these rare gas-forming infections. High glucose concentration within the tissues acts as a favorable substrate for organisms to produce carbon dioxide through natural fermentation processes (1). Our patient too had uncontrolled diabetes at presentation however she was immediately started on insulin in consultation with the endocrinologist to which she responded favorably.



Fig.2a Plain KUB Showing Air Pockets in the Vesical Region (full bladder)

Our patient had E.coli in the culture, which responded to antibiotic therapy. In our case, the patient had a milder variety of EP but a severe form of EC. This in a way helped the patient as he responded well to the conservative management alone. This is in accordance with the literature reports wherein overall death rate reported for EC is 7%, *vis a vis* > 50% reported for EP (5).

Conclusion

Early detection and appropriate treatment of emphysematous pyelonephritis and emphysematous cystitis is important, to avoid the potential morbidity and mortality associated with this infection.

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