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Case Report

Emphysematous Pyelonephritis in a Male Diabetic Patient: A Case Report

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Abstract

Emphysematous Pyelonephritis is a rare ailment characterized by necrotizing infection of kidney resulting in the presence of gas within or around the renal tissue or perinephric tissues. Confirmation of the diagnosis is done by CT (computed tomography) abdomen that has higher specificity and sensitivity as a diagnostic tool. We here present a diabetic male who presented with fever, burning micturition and left flank pain. He was managed for emphysematous pyelonephritis successfully.

Keywords: *Emphysematous Pyelonephritis; CT (Computed Tomography)*

Introduction

Emphysematous pyelonephritis is a rare ailment characterized by necrotizing infection of kidney resulting in the presence of gas within or around the renal tissue or perinephric tissues [1,2]. Most often It is diagnosed in person with diabetes mellitus, mostly higher ratio in women with left side being involved in 60% cases [3]. Clinical display are similar to patients who suffer from acute pyelonephritis but usually there is no response to medical treatment. Confirmation of the diagnosis is done by CT (computed tomography) abdomen that has higher specificity and sensitivity as a diagnostic tool. We here present a diabetic male who presented with fever, burning micturition and left flank pain. He was diagnosed with emphysematous pyelonephritis and treated accordingly [4].

Case Report

A 57-year-old gentleman in usual state of health was brought to emergency with presentation of left flank pain, burning micturition and some element of hesitancy in urine in voiding. There was no alleviating or aggravating factor for this pain. It was associated with fever of 100 Fahrenheit. There was no episode of vomiting but at times he complained of nausea had some constipation history. There was no episode of hematuria or stone passage in past. Rest of the systemic history was not significant. He had past history of diabetes mellitus, hypertension and hepatitis C for which he was complying with treatment. Other than this, he had never been operated for any abdominal surgery. He had a pulse rate of 98/minute and blood pressure of 121/73 mmHg. Examination showed left flank tenderness. Abdomen was

soft and bowel sounds were normal. There was no abdominal mass that could be palpated. He was having no edema, Chest, cardiovascular and central nervous system examination was unremarkable and he was having a GCS (Glasgow coma scale) of 15/15.

His blood hemoglobin and hematocrit levels were sent to laboratory, which were 10.2 g/dL and 30.9% respectively. His white blood cells = 12,900/dl while Platelets were 314000/dl. His Creatinine value was 2.95 mg/dl. His serum electrolytes were within normal range (sodium = 141 mEq/L, potassium = 4.1 mEq/L, chloride = 113 mEq/L, Magnesium = 1.9 mg/dl). Urine analysis showed RBCs = 0 - 1/HPF, WBCs Nil, and PH of 6.5. CT (computed tomography) revealed large emphysematous area was seen in left kidney tissue (Figure 1). Furthermore, there was normal liver and spleen. Gallbladder and biliary system was normal. Rest of the solid abdominal viscera including adrenals and pancreas were unremarkable. Gut loops were unremarkable. Skeleton was grossly unremarkable. We can see a large pocket of air in left kidney. The patient received medical optimization treatment and was kept nil by mouth. Left PCN was inserted but patient condition was not improving and vitals were deteriorating further warranting an emergency nephrectomy. After nephrectomy his vitals began to improve and he was afebrile after aggressive antibiotic regimen of intravenous injection of tienem 250 mg thrice daily, colomycin 3 million units thrice daily for 7 days (urine culture showed *E. coli* resistant to carbapenems so colomycin was also used due to sensitivity test being positive for it), Urine culture was rendered negative after successful antibiotic treatment.

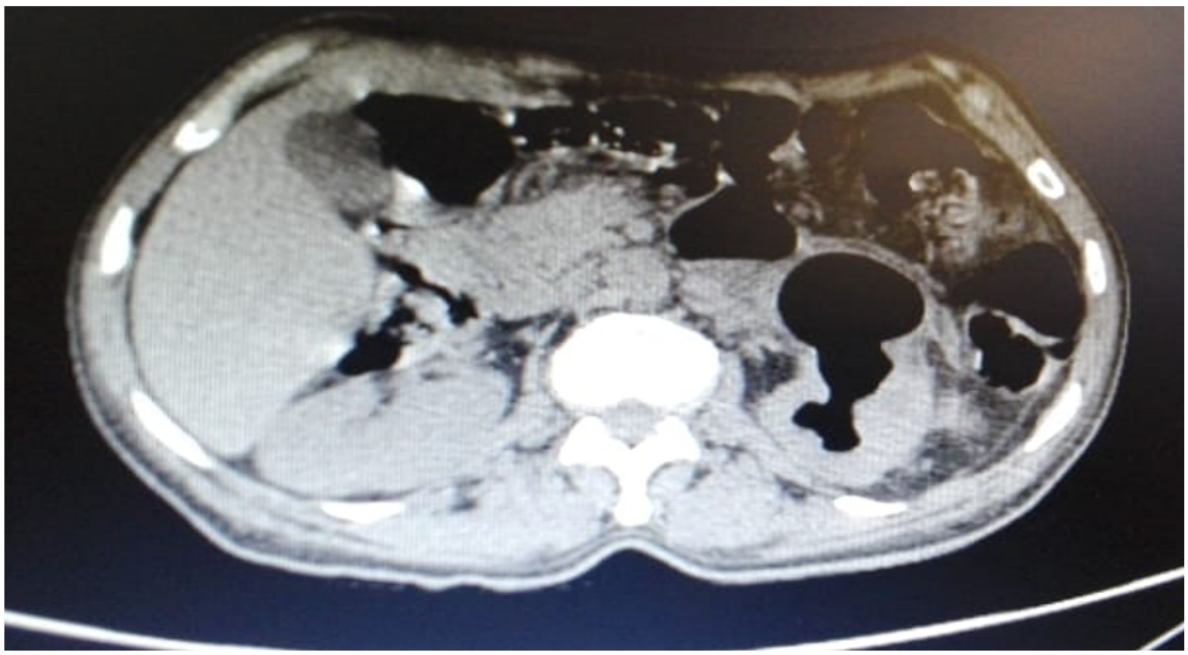

Figure 1: *Left Renal parenchyma has gas (emphysematous pyelonephritis).*

Discussion

Emphysematous pyelonephritis (EPN) one of the rare and dangerous medical condition especially in patients with D.M. and urinary tract infection. In this condition there is a necrotizing infection of kidney parenchyma. It has high mortality rates has been reported at up to 50% for bilateral cases [4,5].

We here had a case of report a case of emphysematous pyelonephritis who was admitted to our hospital with abdominal pain, fever and burning micturition. Patient was optimized medically and treated with IV fluids, antibiotics and monitoring of vitals. The pathophysiological mechanisms of the EPN involve multiple predisposing factors such as high tissue glucose concentration, impaired vascular supply, presence of gas forming organisms, compromised immune system and obstruction in kidney or ureter. It is surprisingly still not known as to why some people develop EPN while others will simply suffer a simple urinary tract infection. In 1889 Muller had identified nitrogen, hydrogen and CO_2 in a patient suffering from EPN [6,7]. Once it was proposed that probably the fermentation products emanating from necrotic tissue produces CO_2. The major gas content in EPN include nitrogen (60%) hydrogen (15%) CO_2 (5%) and O_2 (8%).

EPN is undoubtedly a fatal illness if left untreated. Patients who undergo medical treatment only have a higher chances of mortality rate as compared to those who are treated surgically. Mostly the causative organisms implicated in EPN are *Escherichia coli*, *Proteus mirabilis, Klebsiella pneumoniae* and *Pseudomonas aeruginosa* [7,8]. EPN is a rare entity having high mortality rate if not treated aggressively and timely. An early suspicion of EPN in a patient having diabetes should prompt a physician to do early computed tomography scan to plan further action timely [9,10]. It might reduce mortality and morbidity associated with it. In our case, the patient received medical optimization treatment and was kept nil by mouth. Left PCN was inserted but patient condition was not improving and vitals were deteriorating further warranting an emergency nephrectomy. After nephrectomy his vitals began to improve and he was afebrile after aggressive antibiotic

Conclusion

EPN is a rare entity with associated high mortality rate if not treated aggressively. An early suspicion of EPN in a patient with diabetes who is having pyelonephritis should prompt a physician to do early computed tomography scan to detect and treat it accordingly in time. It might reduce mortality and morbidity associated with it.

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