



EMPHYSEMATOUS PYELONEPHRITIS: A CASE REPORT

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ABSTRACT

Emphysematous pyelonephritis is a rare, fatal suppurative infection of the kidneys which is characterized by intraparenchymal or perirenal gas formation. In this report, findings of a patient who was diagnosed with emphysematous pyelonephritis at our emergency department are presented and discussed in accordance with the literature. A 47 year- old, diabetic female who had a left renal double -J stent was admitted to the emergency department with the complaints of fever, left -sided flank pain and fatigue. The patient who had an increased white blood cell count and an urine sample that is positive for leukocytes was hospitalized with the suspicion of a diagnosis of an emphysematous pyelonephritis and an antibiotherapy was started. For the patients who have the findings of fever and flank pain and have a history of a recent renal intervention, an early diagnosis using all necessary diagnostic methods to reduce mortality rates is crucial. This is especially true for the patients with a known history of diabetes.

INTRODUCTION

Emphysematous pyelonephritis is a rare, life-threatening suppurative renal infection and the early diagnosis of it is often life saving. It is characterized by the gas formation in the renal parenchyma or perirenal tissues [1]. This condition needs to be treated not only with the suitable antibiotherapy but also with surgical drainage [2]. The symptoms and the clinical and laboratory findings of this rare disease are non-specific. Thus, the diagnosis can only be reached by using imaging techniques [3]. In this paper, the clinical and radiological findings of a 47- year- old female patient, diagnosed with emphysematous pyelonephritis is presented and discussed.

CASE REPORT

A 47-year- old woman with the complaints of coughing, left flank pain, fever, nausea and weakness, was admitted to our emergency service. The history revealed that this diabetic patient had a recent left renal double J stenting procedure for hydronephrosis due to a renal calculus and had been using seftibuten, ciprofloksasin,

seftriakson for a week. The arterial blood pressure of the patient was 150/75 mmHg with a pulse of 90/min and the body temperature was 37.5 °C. A physical examination revealed decreased breathing sounds in the left basal lung and tenderness along the course of the left ureter and at the costovertebral angle. The white blood cell count was 19.750 and the the urine analysis were positive for abundant leukocyte and bacteria. An ultrasonography of the urinary system showed a stent located at the upper pole of left kidney. The upper part of the left kidney was heterogeneous and decreased in echogeneity. The hypoechoic kidney area had internal milimetric hyperechoic foci with ring-down artefacts, which were consistent with air echoes (Figure 1). Because an abscess formation couldn't be excluded by the use of sonography alone, a computed tomography of the abdomen was performed. CT imaging demonstrated focal heterogeneous, non-enhanced parenchymal areas in the posterior cortex of the middle part and the upper pole of the left kidney. An abscess formation with a diameter of 6 cm that contained



internal air foci was found on images, which extended from the upper pole cortex of the left kidney to the perirenal fatty tissues. In left kidney upper pole, air image inside, hypodens areas compatible with microabscess formation (Figure 2). With the diagnosis of a left emphysematous pyelonephritis due to stent placement, the patient was treated with a 500 mg imipenem in the emergency service. The vital findings of the patient were

stabilized in the emergency service. The patient was consulted with the internal affairs and decided to be hospitalized by the urology service. During the follow-up period, clinical progress was observed. At the second day of her hospitalization, a nephrostomy catheter was inserted and the abscess was drained by the interventional radiology department. The patient was discharged at the end of the 8th day of her hospitalization.

Figure 1. In left kidney upper pole, air image inside, hypodens areas compatible with microabscess formation on USG



DISCUSSION

Emphysematous pyelonephritis is a necrotizing infection of the renal parenchyma and the surrounding tissues and it is characterized with gas formation in renal parenchyma, collecting system or in the perinephritic tissues [1,4]. The diabetes and urinary system obstructions may be the predisposing factors for the development of emphysematous pyelonephritis [5]. More than 90 percent of the patients are diabetic and the female to male ratio is reported to be 6:1 [6]. Fever and flank pain in a diabetic patient should arise the suspicion of emphysematous pyelonephritis [7]. The period between the start of the symptoms and the diagnosis range between 8-14 days in various publications [6,8]. In our case, as pointed out in the literature, the patient was a diabetic female with the complaint of flank pain. She was admitted to our emergency service 8 days after an intervention for the left kidney. On the same day, she was diagnosed with emphysematous pyelonephritis and the treatment was started. Since the symptoms, laboratory and clinical findings of emphysematous nephritis are non-specific, the diagnosis should be supplemented with radiological examinations when suspected [3]. Emphysematous pyelonephritis is classified into two categories as type 1 and type 2. Type 1 emphysematous pyelonephritis is characterized with gas formation along with a parenchymal

damage, it has a fulminant course and usually requires immediate nephrectomy. Type 2 emphysematous pyelonephritis is characterized with gas in collecting tubules and the presence of a perirenal fluid collection [1,2,9,10]. Radiographies show the psoas shadow to be lost and it is also possible to see gas bubbles in renal parenchyma, collecting tubules and in perirenal tissues. Although the ultrasonography, a practical and non-invasive technique, is the preferred modality in most of the cases; it is not sufficient to make a diagnosis or to determine the extent of the disease [2,3,9]. The ultrasonography was the preferred initial modality in our case but to exclude an abscess formation, a CT scan was conducted. CT findings of this patient revealed a type 2 emphysematous pyelonephritis. In the treatment of emphysematous pyelonephritis, it is necessary to start a broad spectrum antibiotherapy after getting urine and blood samples. The treatment is then continued with the control of the diabetes and the administration of the appropriate antibiotics according to the blood-urine culture results. Currently, percutaneous drainage and antibiotherapy are considered to be the most appropriate treatments [2,9,11]. In our case, a broad spectrum antibiotherapy was started according to laboratory results in the emergency department and the patient was hospitalized. On the second day of her hospitalization, the abscess was percutaneously drained.



The patient was discharged at the end of the 8th day of her hospitalization.

CONCLUSION

Emphysematous pyelonephritis is a rare infection that requires emergent diagnosis and treatment. For the patients who admit to the emergency department with fever

and flank pain complaints and who had a history of recent renal interventional procedures, suspecting emphysematous pyelonephritis in the differential diagnosis and using the necessary diagnostic methods to form an early diagnosis is of substantial importance to reduce mortality rates. This is especially true for the patients with a known history of diabetes.

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