

Emphysematous pyelonephritis: A Case Report

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Abstract: Emphysematous pyelonephritis (EPN) is a life threatening infection of kidneys, with characteristic gas formation within or around the kidneys. If not treated immediately, it may lead to fulminant sepsis and carries a high mortality. E. coli usually considered the most common causative organism. We discussed etiopathogenesis, radiological and clinical signs and treatment of emphysematous pyelonephritis in this case report. We report a case of a 37 year old female with no prior medical history presented with right flank pain fatigue, nausea and vomiting. She was diagnosed with emphysematous pyelonephritis and successfully treated. Emphysematous pyelonephritis is a life-threatening infection that should always be considered in the differential diagnosis for a patient with abdominal pain or suspected pyelonephritis.

Keywords: Emphysematous pyelonephritis, emergency department.

INTRODUCTION

Emphysematous pyelonephritis is a life threatening infection of kidneys, with characteristic gas formation within or around the kidneys. If not treated immediately, it may lead to fulminant sepsis and carries a high mortality [1-5]. E. coli usually considered the most common causative organism. CT scan is the most sensitive (100%) investigation to confirm the diagnosis. EPN may present with vague clinical symptoms such as fever, abdominal pain, nausea and vomiting with sudden clinical deterioration. Treatment includes antibiotics, percutaneous drainage or nephrectomy [1-5]. Patients with fulminant clinical course or unsuccessful are at high risk of death and nephrectomy should be provided. We discussed etiopathogenesis, radiological and clinical signs and treatment of emphysematous pyelonephritis in this case report.

CASE PRESENTATION

A 37-year-old, female patient who had no medical history speciality, applied to a state hospital for her abdominal pain, nausea, emesis and feeling cold complaints which persisted about ten days. She was directed to our emergency service for advanced medical research. In our service we re-examined the patient, determined abdominal pain localized to right lower quadrant and also positive right costovertebral angle tenderness. Initial vital signs showed a temperature of 37.2 °C, blood pressure of 103/59 mmHg and heart rate of 86/beats per min. In her blood specimen WBC:18100/mm³, CRP:8.06 mg/dl and urinary

specimen WBC:229/HPF. The USG report presented right pelvicalyceal system had grade 3 dilatation and also there was a 1.3 cm size renal calculi in proximal ureter. The CT report said there was perirenal fluid and some gaseous images in right kidney parenchyma. After that her blood culture was taken and E.coli was determined. Then she had been nephrostomy operation and antibiotherapy was begun (ceftriaxone 2*1 gr). Two weeks medication was successful, therefore she discharged from hospital and also she was warned to come back two week later for nephrolithotomy.

DISCUSSION

EP is a rare infection of renal parenchyma and perirenal tissues which characterized by gas formation in that areas. EP which was firstly defined by Kelly and Mc Callum is seen in females more than males. EP has an unclear pathogenesis but gas producing bacterias, DM, insufficient body response, insufficient tissue perfusion and vascular changes according to them are major risk factors for its forming. Many of EP patients have DM also. On the other hand if no DM, mostly EP patients have renal obstruction and renal calculi. In our case she has 1.3 cm size renal calculi in right kidney. E.coli, Klebsiella pneumoniae, Proteus mirabilis ve Pseudomonas aeruginosa are the main causative microorganisms [3,4]. In our case E.coli was determined in patient's blood culture.

High fever, abdominal pain, nausea and vomiting are the major clinical findings. It can be

determined costovertebral angle tenderness, abdominal pain, leucocytosis, hyperglisemia, electrolyte changes [5]. CT is the main device for diagnosis and treatment observation [2,4]. CT features of emphysematous pyelonephritis differentiates into two types. Type 1 is characterized by parenchymal destruction with either

absence of fluid collections or presence of streaky or mottled gas. Tip 2 AP is characterised as either renal or perirenal fluid collections with bubbly or loculated gas or gas in the collector system [1,3,5]. Type 1 AP is more fulminant and generally emergent nephrectomy is necessary. Our patient was diagnosed as type 2 AP.

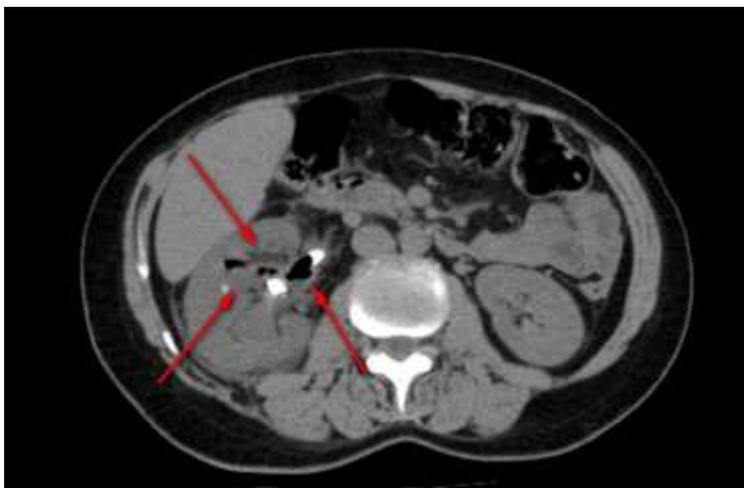


Figure: Abdominal CT; enlarged kidney and gaseous images in parenchyma

In the treatment of AP the hemodynamic of patient must be provided against shock risk. Firstly blood specimen should be got for culture and then broad spectrum antibiotics should be started. When blood culture become clear, antibiotherapy must go on with spesific drugs. Antibiotherapy must be at least two week. As in our case percutaneous drainage is frequently added to the antibiotherapy. If this medications become unsuccessful, the last cure is nephrectomy [5]. AP patients have high mortality, because it has nonspecific symptoms and also delayed usage of appropriate diagnostic tests. So in the urinary obstructed pyelonephritis cases right diagnose should be done quickly and therapy should be started without delay.

REFERENCES

1. Wan YL, Lee TY, Bullard MJ, Tsai CC; Acute gasproducing bacterial renal infectionxrelation between imaging findings and clinical outcome. *Radiology*, 1996;198(2):433-438.
2. Lowe BA, Poage MD; Bilateral emphysematous pyelonephritis. *Urology*, 1991; 37:229-232.
3. Turunç T, Turunç T, Güvel S; Emphysematous pyelonephritis. *Inonu Medical Journal*, 2004;11(3) 201-206
4. Wang TC, Mo HH, Hsu CW, Hsiao HF. Atypical Presentation of Emphysematous Pyelonephritis *Fu-Jen Journal of Medicine*, 2011; 9 (4) 221-226
5. Huang JJ, Tseng CC; Emphysematous pyelonephritis: Clinicoradiological classification, management, prognosis and pathogenesis. *Arch Intern Med*, 2000;160:797-805.