



Case report

Concurrent bilateral emphysematous pyelonephritis and secondary iliopsoas abscess extending to thigh muscles with profuse rectal bleeding. A rare case scenario

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ABSTRACT

Introduction: Bilateral emphysematous pyelonephritis is exceedingly rare.

Case presentation: A 56 year old diabetic male presented with high grade fever 40^o c, chills, and bilateral loin pain since two weeks a picture of septic shock. CT showed bilateral emphysematous pyelonephritis, the left kidney was smaller in size, the right renal unit showed marked hydronephrosis, right iliopsoas abscess extending to the thigh. The patient was managed by bilateral nephrostomy tubes and two retroperitoneal drains. Initially, the patient recovered, but the general condition deteriorated and profuse rectal bleeding occurred. Colonoscopy showed bleeding colonic mucosa.

Conclusion: Bilateral emphysematous pyelonephritis is devastating disease that should be managed promptly to avoid septic shock.

1. Introduction

The emergence of a psoas muscle abscess in conjunction with emphysematous urinary tract infection is pretty uncommon. Urinary tract infections such as renal abscess, perinephric abscess, and emphysematous pyelonephritis complicated by psoas muscle abscess were identified infrequently. Emphysematous pyelonephritis (EP) is a complicated upper urinary tract infection (UTI) characterized by air within the renal parenchyma, renal calyces, and renal pelvis. The predisposing factors include urinary tract obstruction and diabetes mellitus. *Escherichia coli*, proteus mirabilis, pseudomonas aeruginosa, and *Klebsiella pneumoniae* are the predominant etiologic organisms [1]. A diverse clinical picture varies from incidental diagnosis on abdominal imaging to severe sepsis.

A clinical triad of fever, back pain, and limp pain specify the psoas abscess [2]. Inflammatory bowel disease, is the most common concomitant diagnosis associated with psoas abscess. Cases of secondary psoas abscess from UTIs were reported from renal abscess, perinephric abscess, and emphysematous pyelonephritis [3,4]. The management of psoas abscess entirely involves drainage or surgical resection and

adequate antibiotic therapy as well. Delayed diagnosis and treatment is associated with high morbidity and mortality. Herein, we present a rare case of bilateral EP concomitant with bilateral psoas abscess in a diabetic old man.

2. Case presentation

A 58 year old male patient. He was presented with high grade fever reaching 40^oc, chills, and bilateral loin pain sine two weeks. The patient has history of pain related to the left thigh, few days prior to presentation. He is known case of diabetes mellitus. He has irrelevant surgical history. The patient has history of recurrent UTI. Moreover, he has no history of stone disease.

Lab profile on presentation was creatinine 917 mmol/L (N. 59-104), hemoglobin 6.5 g/dL (N. 13-17), total leucocytic count 40.7×10^3 (N. $4-10 \times 10^3$), INR 1.8, creatinine kinase (CK) 447 (N. 0-24), random blood sugar was 8.45 mmol/L (N. 4.1-5.9) and within range serum electrolytes. Urine culture showed *E. coli* was the causative organism, while, blood culture revealed no growth of organisms.

CT showed picture of bilateral emphysematous pyelonephritis. The

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right kidney showed marked hydronephrosis with multiple air locules inside the pelvicalyceal system involving extending to the calyces and renal parenchyma (grade IV emphysematous pyelonephritis). Right ileopsoas muscle was infiltrated extending from the lower pole of the right kidney down to the thigh. The left kidney was small in size with multiple renal stones inside. Moreover, it harbors multiple air locules (grade II emphysematous pyelonephritis) (Fig. 1).

Given the general condition of the patient, signs of septic shock, and prompt patient life-saving, the empirical antibiotics were given until exchanged based on the culture obtained. After ICU admission for two days, the patient was managed initially with broad spectrum antibiotics. He underwent bilateral nephrostomy tubes fixation. Moreover, two retroperitoneal drains were fixed to drain to the iliopsoas abscess. After clinical improvement, the patient was transferred to the ward. Total leucocytic count dropped to 16.6, creatinine reached 663 mmol/l (N. 59-104), HGB 8.2 g/dl (N. 13-17), and within range serum electrolytes. A follow up CT showed marvelous improvement of the EP and psoas abscess (Fig. 2).

Unfortunately, the general condition of the patient deteriorated and retransferred to ICU. Profuse rectal bleeding come across. The patient was managed with colonoscopy, that revealed patchy oozing bleeding colonic mucosa with no obvious source of bleeding (Fig. 3). The patient was maintained on inotropes but he passed away. The overall hospital stay was 7 days of which two days stay in the ICU.

3. Discussion

Emphysematous pyelonephritis (EP) is an acute severe necrotizing infection of the renal parenchyma and its surrounding tissues that results in the presence of gas in the renal parenchyma, collecting system, or perinephric tissue. The cause for mortality in EPN is primarily due to septic complications. Up to 95% of the cases with EPN have underlying uncontrolled diabetes mellitus. The risk of developing EPN secondary to a urinary tract obstruction is about 25–40% [5]. Psoas abscess is usually characterized as primary or secondary based on the presence of an underlying illness. Hematogenous dissemination of an infectious condition from an obscure source in the body is most likely the etiology of primary psoas abscess. Diabetes mellitus, intravenous drug misuse, renal failure,

and immunosuppression are some of the underlying diseases, meanwhile, continuous spread of infectious process from neighboring organs is the most common cause of subsequent psoas abscess. The most common cause of secondary psoas abscess is gastrointestinal tract disease, particularly Crohn's disease. Vertebral osteomyelitis, urinary tract infections, and intra-abdominal malignant tumors are among the others. Renal abscess, perinephric abscess, and emphysematous pyelonephritis are reported predisposing UTIs associated with psoas abscess. The abundant blood supply of the psoas muscle is likely to permit hematogenous spread [2].

Psoas abscess does have variety of clinical characteristics. Only 30% correlate fever, back pain, and a limp with the clinical triad. The psoas muscle, which is innervated by L2–4, can cause pain in the hip and thigh. Vulgar abdominal discomfort, lethargy, nausea, and weight loss are some of the other symptoms. Our patient reported a minor lumbar discomfort and a fever [2].

The treating of a psoas abscess usually entails the use of antibiotics as well as percutaneous or surgical drainage. It was worth noting that the size of the psoas abscess is at the core of surgical intervention. Antimicrobial alone could be used to manage a psoas abscess with a maximum diameter of less than 3 cm [6]. Our case had unilateral diffuse secondary psoas abscess extending from the right lower renal pole till the abscess reaches the thigh at the femur neck. So, solo medical treatment was unlikely to stabilize the patient condition.

A number of research studies concluded the feasibility of conservative treatment with no need for nephrostomy tubes fixation or emergent nephrectomy [6]. Despite broad spectrum antibiotic therapy, bilateral nephrostomy tubes fixation, and aggressive supportive care in ICU, the patient's condition deteriorated. We re-conducted abdomen-pelvis CT to check the status of preexisting EP and psoas abscess. The CT showed that the psoas abscess still exist, but, to a lesser degree as pre ICU admission.

The reported fatality figures for main psoas abscess were 2.4%, while it was greater in the secondary subtype (19%). Untreated individuals have a near-100% fatality rate. Early detection is crucial for reducing intrusive procedures and achieving a positive outcome [2]. Early diagnosis is the key for minimizing invasive procedure and favorable outcome.

Gastrointestinal bleeding is one of the major diagnoses of critical

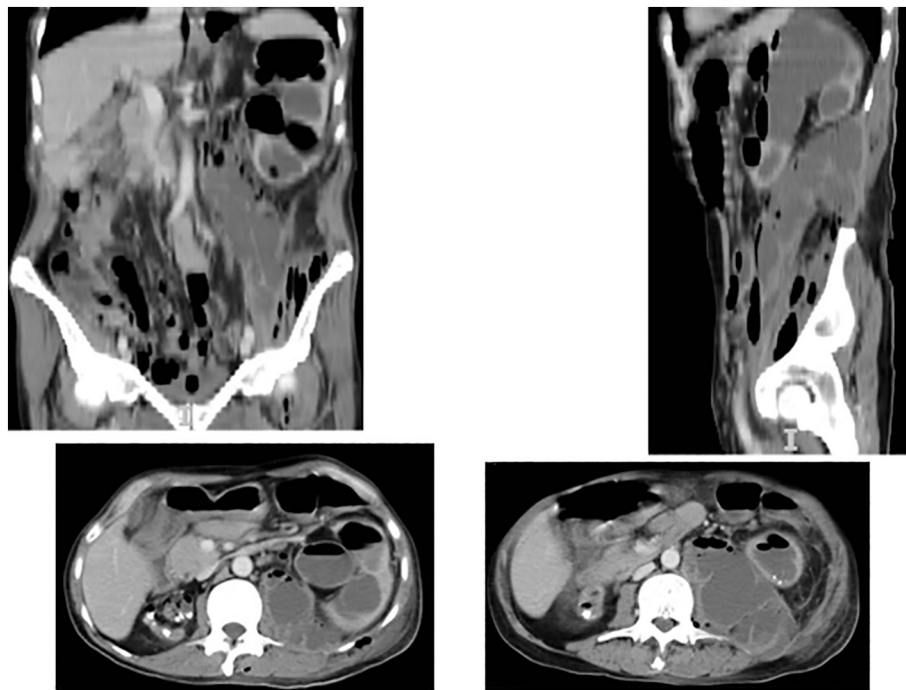


Fig. 1. CT images. Bilateral emphysematous pyelonephritis. Left psoas abscess extending into the thigh.

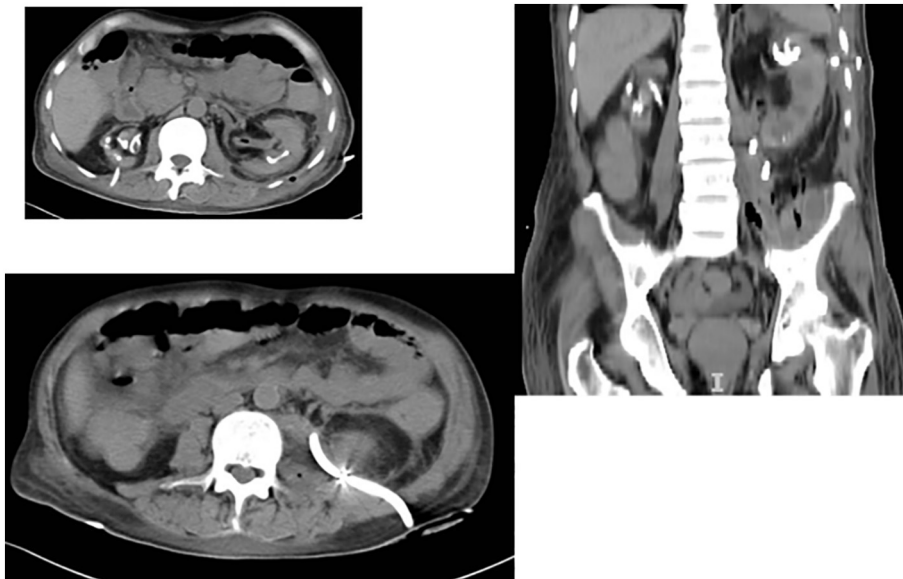


Fig. 2. CT images. Resolution of the EP and psoas abscess after drainage.

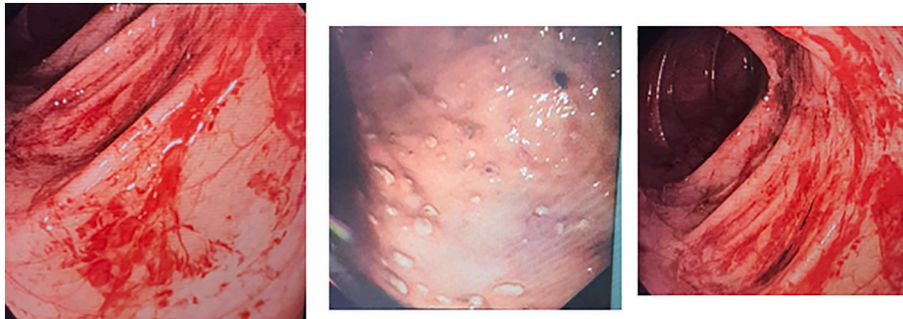


Fig. 3. Colonoscopy showed mucosal bleeding with small mucosal nodules.

care patients. The incidence of Gastrointestinal bleeding has been shown to be approximately 1.5% to 8.5% in critically ill patients, where patients with critical illness in conjunction with Gastrointestinal bleeding exhibit higher mortality in comparison to those without Gastrointestinal bleeding [7]. The patient condition deteriorated with brisk rectal bleeding overwhelmed. Colonoscopy revealed diffuse oozing from the colonic mucosa with no apparent visible lesion (Fig. 3).

To wrap up, the entire case scenario emphasizes that early diagnosis and treatment of psoas abscess is pivotal. The clinician should keep in mind that psoas abscess can develop as a complication of bacteremia which is not uncommon in community acquired urinary tract infections.

4. Conclusion

Bilateral emphysematous pyelonephritis is devastating disease that should be managed promptly to avoid septic shock. Moreover, the prophylactic approach should be adopted in such patient who have the risk factors specially DM.

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None.

Ethical approval

Approval of the Institutional Review Board according to publish this case report was obtained.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request [8].

Research registration

None.

Guarantor

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Declaration of competing interest

None.

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