

## Emphysematous Pyelitis Disguised as Cholestasis and Jaundice

Jennifer Hines\* and Richard Shellenberger

St. Joseph Mercy Health System-Ann Arbor, Ypsilanti, MI, USA

\*Corresponding author: Hines J, St. Joseph Mercy Health System-Ann Arbor, Ypsilanti, MI, USA, Tel: 734-712-3456; E-mail: jennifer.e.hines@gmail.com

Rec date: Jun 30, 2016; Acc date: Aug 10, 2016; Pub date: Aug 14, 2016

Copyright: © 2016 Hines J, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

Emphysematous pyelitis is a rare infection of the renal pelvis occurring alone or in association with pyelonephritis. The most common cause is *E. coli* and diabetes is the strongest risk factor. In a retrospective review including 48 patients who were diagnosed with either emphysematous pyelitis or pyelonephritis, the mean patient age was 60 years old and women outnumbered men 6:12. The most common initial symptoms include fever, dysuria, abdominal pain, and flank pain. The most frequent organ system involvement is hematologic and renal.

Our patient, a 76 year old female, with no past medical history, presented with progressive weakness followed by the onset of jaundice. Her exam was notable for hypertension but no fever, jaundice, epigastric/right upper quadrant abdominal tenderness or peritoneal signs. Labs were remarkable for a profound leukocytosis, anemia, cholestasis, and an elevated creatinine. An abdominal ultrasound did not reveal cholecystitis or a common bile duct obstruction. Empiric antibiotics to include Ceftriaxone and Flagyl were started for possible cholangitis.

On hospital day two, an abdominal endoscopic ultrasound was performed in lieu of a contrast study as renal function had worsened. This examination was normal. A non-contrasted CT scan of the abdomen and pelvis demonstrated the unusual findings of emphysematous pyelitis with a surrounding fluid collection concerning for a perinephric abscess. Subsequent management included placement of a percutaneous nephrostomy tube and antibiotics. Emphysematous pyelitis presenting as cholestasis is a novel clinical presentation of a rare illness.

**Keywords:** Emphysematous pyelitis; Cholestasis; Jaundice

### Background

Emphysematous pyelitis (EP) is a rare infection of the renal pelvis most commonly occurring in diabetics and presenting with dysuria, fever, and flank pain. It is thought to be a result of gas producing bacteria, most commonly *E. coli* and *Klebsiella* species, infecting the renal pelvis. It is differentiated from emphysematous pyelonephritis (EPN) in that the air is around the collecting system and not within it. EP carries a much better prognosis than EPN with a mortality rate of approximately 20% versus 50%, respectively [1-3]. Complications include intra-renal and perinephric abscesses, spontaneous renal hemorrhage, and in the most severe cases, death. The recommended treatment is drainage of the abscess and completion of a prolonged course of antibiotics [2]. In rare cases, EPN has been associated with mild cholestasis and hyperbilirubinemia. In these cases, it is thought that the cholestasis is related to sepsis and does not represent any obstruction of the biliary tree. In this article, we present an atypical presentation of a rare disease in an effort to increase awareness and understanding of the various clinical signs and symptoms associated with emphysematous pyelitis [2].

### Case Report

Our patient, a 76-year-old female, with no past medical history, presented to the emergency department with progressive weakness followed by the onset of jaundice. Other symptoms included a decreased appetite, nausea, generalized abdominal pain, diaphoresis and chills. She was afebrile and hypertensive on presentation. Physical

examination revealed an ill appearing female with jaundice and epigastric/right upper quadrant abdominal tenderness. Peritoneal signs were absent. Laboratory studies were remarkable for a profound leukocytosis, anemia, cholestasis, and an elevated creatinine. An abdominal ultrasound did not reveal cholecystitis or a common bile duct obstruction. Empiric antibiotics to include Ceftriaxone and Flagyl were administered for the treatment of possible cholangitis.



**Figure 1:** CT abdomen and pelvis without contrast 11/05/15 Initial CT scan demonstrating a left sided perinephric abscess and air fluid levels within the renal pelvis.

On hospital day two, the renal function worsened which led to the gastroenterologist performing an abdominal endoscopic ultrasound (EUS) to evaluate the cholestasis. The EUS did not reveal any abnormalities. Consequently, a non-contrasted computerized tomography (CT) scan of the abdomen and pelvis was then performed and demonstrated the unusual findings of emphysematous pyelitis with a surrounding fluid collection concerning for a perinephric

abscess (Figure 1) and a chronic left ureteropelvic junction obstruction.

Management included placement of a percutaneous nephrostomy tube (Figure 2) which drained 500 cc's of purulent fluid.



**Figure 2:** CT abdomen and pelvis without contrast 12/04/15 (post nephrostomy tube placement).

Post percutaneous nephrostomy tube placement for drainage of the perinephric abscess. Her cultures remained negative but were collected after initiation of antibiotics. She was discharged after a 7 days hospital course but subsequently completed a four-week course of intravenous Ceftriaxone with improvement in her symptoms. She was discharged with plans to follow up with urology in regards to her nephrostomy tube and chronic left ureteropelvic junction obstruction.

## Discussion

Emphysematous pyelitis and pyelonephritis are rare diseases most often seen in diabetics and those with urinary tract obstruction. Gas in

the renal system signifies a serious urinary tract infection with high mortality. Distinguishing EP from EPN clinically may be difficult; however, the former has a lower degree of sepsis related mortality. Cholestasis has rarely been reported with either condition, although it is not uncommon with bacterial sepsis. We presented a patient with cholestasis and abdominal pain but no symptoms of a urinary tract infection. In evaluating the cholestasis, she was found to have no hepatobiliary abnormalities but was found to have emphysematous pyelitis, an extremely rare condition. If not diagnosed early, both infections can progress rapidly and lead to sepsis and death. We present our case to help raise provider awareness of a rare presentation of an uncommon diagnosis. Although literature is limited on management, most authors recommend percutaneous drainage as the preferred treatment given the lower mortality rate when compared to medical management or an emergency nephrectomy [4]. In our case, the patient made a full recovery after treatment with percutaneous drainage and a four week course of antibiotics.

## References

1. Hiremath R, Mahesh, Padala KP, Swamy K, Pailoor A (2015) A rare case of pneumoureter: Emphysematous pyelitis versus emphysematous pyelonephritis. *J Clin Diagn Res* 9: TD03-TD05.
2. Huang JJ, Tseng CC (2000) Emphysematous pyelonephritis. *Arch Intern Med Archives of Internal Medicine* 160: 797.
3. Kua Ch, Aziz YA (2008) Air in the kidney: Between emphysematous pyelitis and pyelonephritis. *Biomed Imaging Interv J* 4: e24.
4. Lu YC, Chiang BJ, Pong YH, Huang KH, Hsueh PR, et al. (2014) Predictors of failure of conservative treatment among patients with emphysematous pyelonephritis. *BMC Infect Dis BMC Infectious Diseases* 14: 418.