

# CITROBACTER KOSERI - AN UNUSUAL CULPRIT OF PYOGENIC LIVER ABSCESS

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## Background

Liver Abscess refers to pus filled pockets in the liver most commonly caused by bacterial, fungal or parasitic infection. Pyogenic liver abscess(PLA) account for majority of the cases. E.Coli and Klebsiella pneumonia are the most common organism isolated from PLA. Citrobacter koseri, a Gram negative bacterium belonging to Enterobacteriaceae is rare cause of PLA. Citrobacter koseri is predominantly an opportunistic or a nosocomial pathogen, however may infect immunocompetent individuals

## Case Report

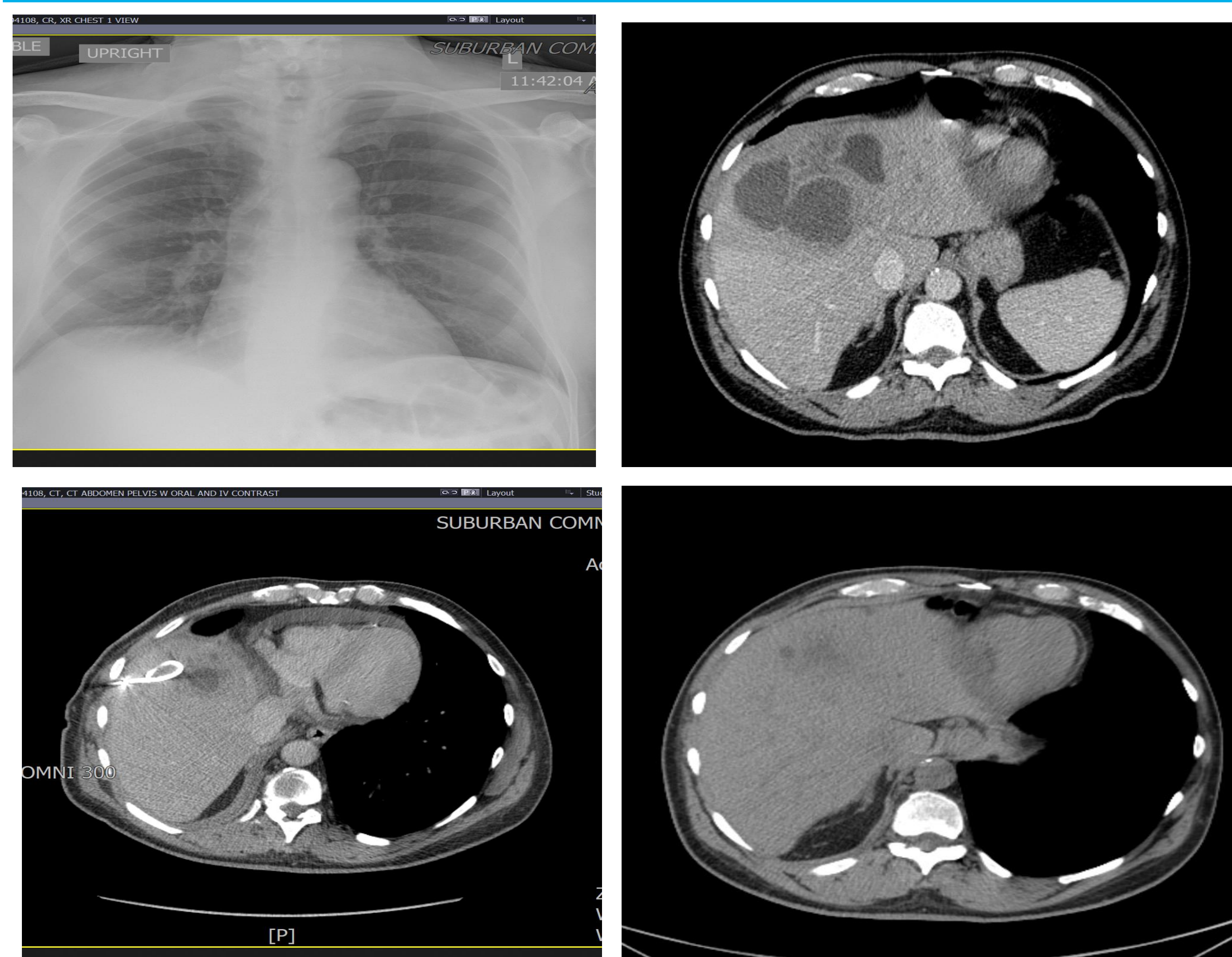
A 70-year-old male with a past medical history of Hypertension, Hyperlipidemia, Peripheral vascular disease, and right lower extremity stent placement presented with a 5-week-history of cough. Patient presented to outpatient clinic for evaluation of cough. He was prescribed Azithromycin and prednisone for 5 days. The cough persisted and on further evaluation patient described generalized fatigue, loss of appetite, weight loss of ~15 lbs, and fever for past 4 weeks. Due to persistent cough and failed outpatient therapy; chest x-ray was order which showed a suspicious hump under right diaphragm. He was evaluated further with CT abdomen showing pus filled pockets in liver.

CT guided aspiration was done, and 2 drainage catheters were placed which yielded about 245 cc of purulent fluid. Body fluid was sent for culture and sensitivity. Body fluid culture grew *Citrobacter koseri* which was sensitive to Ceftriaxone and Levofloxacin. Blood culture showed no growth at 5 days. Intravenous Ceftriaxone was given during the hospital stay and the patient improved medically. Due to affordability issues, the patient was discharged on oral Levofloxacin for 4 weeks. Repeat CT scan at 4 weeks showed that there was a significant interval decrease in size of the hepatic abscess. Antibiotics along with pigtail catheter was continued and repeat CT showed complete resolution of hepatic abscess.

## Labs and culture

H/H 10.2/30.5, WBC: 13.20, AST: 49, ALT: 83, Alk. Phos: 178 and INR: 1.38. Chest x-ray showed mild elevation of the right hemidiaphragm and right basilar infiltrate. CT scan of abdomen and pelvis with IV contrast demonstrated 11x9 cm multiloculated area of fluid within the right lobe of liver. Body fluid culture grew *Citrobacter koseri* which was sensitive to Ceftriaxone and Levofloxacin. Blood culture showed no growth at 5 days. Repeat CT scan showed that there has been a significant interval decrease in size of the hepatic abscess collection; drainage catheter was removed.

## X-ray / CT scan



## References

- 1.Liver abscess with Citrobacter koseri bacteremia.Yohei Kanzawa , Naoto Ishimaru , Hiroyuki Seto , Takahiko Tsutsumi , Saori Kinami
- 2.Optimum management of Citrobacter koseri infection.Aydin Deveci , Ahmet Yilmaz Coban
- 3.Characteristics and management of pyogenic liver abscess.A European experience. Cristina Serraino, MD,Chiara Elia, MD, Christian Bracco, MD, Gianluca Rinaldi, MD, Fulvio Pomero, MD, Alberto Silvestri, MD,Remo Melchio, MD,and Luigi Maria Fenoglio, MD

## Discussion

PLA is an important cause of liver abscess and can present with atypical symptoms. In this case patient presented with atypical persistent cough with failed outpatient therapy. The liver can be invaded by bacteria by ascending cholangitis from biliary system, hepatic artery secondary to bacteremia or traumatic implantation of bacteria by interventional procedure. In western word the most common organism responsible for PLA is E. Coli.

Citrobacter species are rare cause of PLA. They are aerobic, Gram Negative bacilli belonging to Enterobacteriaceae family. Citrobacter species are commonly found in water, soil, food, and intestinal tracts of animals and human. Many infections are nosocomial; however, they can also be community acquired. Citrobacter can cause wide spectrum of infections in humans. UTI is most common, but PLA is caused by Citrobacter is rare with only few cases reported in Immunocompetent individuals.

Citrobacter species are usually resistant to antibiotics and requires percutaneous drainage with antibiotic coverage. Antibiotics need to be selected by culture and sensitivity. Patients need to be reevaluated with imaging at fixed intervals to see resolution of abscess. Hepatic abscess in this case presented with cough and there are reported cases where untreated hepatic abscess can communicate with pleural cavity and develop hepatobronchial fistula. The treating team was aware of the complications and decided to follow through with CT imaging at 4 and 8 weeks to look for complete resolution.

## Conclusion

*Citrobacter koseri* is an unusual cause of pyogenic liver abscess. The previously reported cases of *Citrobacter koseri* - associated liver abscesses include renal issues and diabetes as comorbidities, but our patient does not have those comorbidities. Cough is an unusual presentation of hepatic abscess. Prompt treatment with drainage and antibiotics is essential to preclude fatal complications of hepatic/portal venous thrombosis, abscess rupture, or sepsis.