

Treatment of Invasive Liver Abscess Syndrome with Limited Percutaneous Drainage and Antibiotics

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INTRODUCTION

- *Klebsiella pneumoniae* primary liver abscess (KLA, or invasive liver abscess syndrome) is characterized by bacteremia, liver abscesses, and metastatic infections
- Rarely seen in the U.S. with approximately 20 documented cases as of 2007 [1]
- Often originates as a single liver mass
- Complications include multiple liver lesions, endophthalmitis, meningitis, or distant abscesses
- First line therapy involves abscess drainage

CASE DESCRIPTION

A 47-year-old Thai male who immigrated 8 years prior presented with right upper quadrant pain, nausea, vomiting, and diarrhea. He denied any recent travel, hematochezia, melena. Denied past medical, surgical, or family history. Not currently on medications or supplements. Non-smoker, no alcohol use, no illicit drug use. No known allergies.

Vital signs: Temp 100.9 F, HR 125, BP 154/88, RR 18, SaO₂ 95% on 5L nasal cannula

Labs: WBC 4.04 x 10³/mCL, Hgb 10.9 g/dL, MCV 92 fL, AST 75 U/L, ALT 112 U/L, T. Bilirubin 1.9 mg/dL, Procalcitonin 1.26 ng/dL

CT abdomen and pelvis: 4.1 x 3.3 cm mass in the anterior right liver lobe, 2.9 x 3.2 cm mass in the medial right liver lobe (**Image 1**). Imaging findings concerning for metastatic disease.

MRI of the abdomen: revealed 3 additional subcentimeter foci in the left posterior liver

Blood cultures: pan-sensitive *Klebsiella pneumoniae*

CLINICAL COURSE

- Due to proximity of surrounding structures, only 1 of 5 abscesses were accessible via interventional radiology
- CT-guided drain placed in the largest right liver abscess given its accessible location
- Abscess culture revealed *K. pneumoniae*, confirming the diagnosis of KLA
- Patient started on intravenous metronidazole and ceftriaxone for 2 weeks, then transitioned to oral amoxicillin-clavulanic acid for additional 2 weeks
- Repeat CT abdomen obtained two weeks following treatment, revealing moderately diminished right lobe lesions (**Image 2**)
- Physical exams did not reveal presence of ophthalmologic or neurologic deficits
- Abscess drains were removed and patient was discharged with oral antibiotics and instructed to follow-up in continuity clinic for repeat imaging

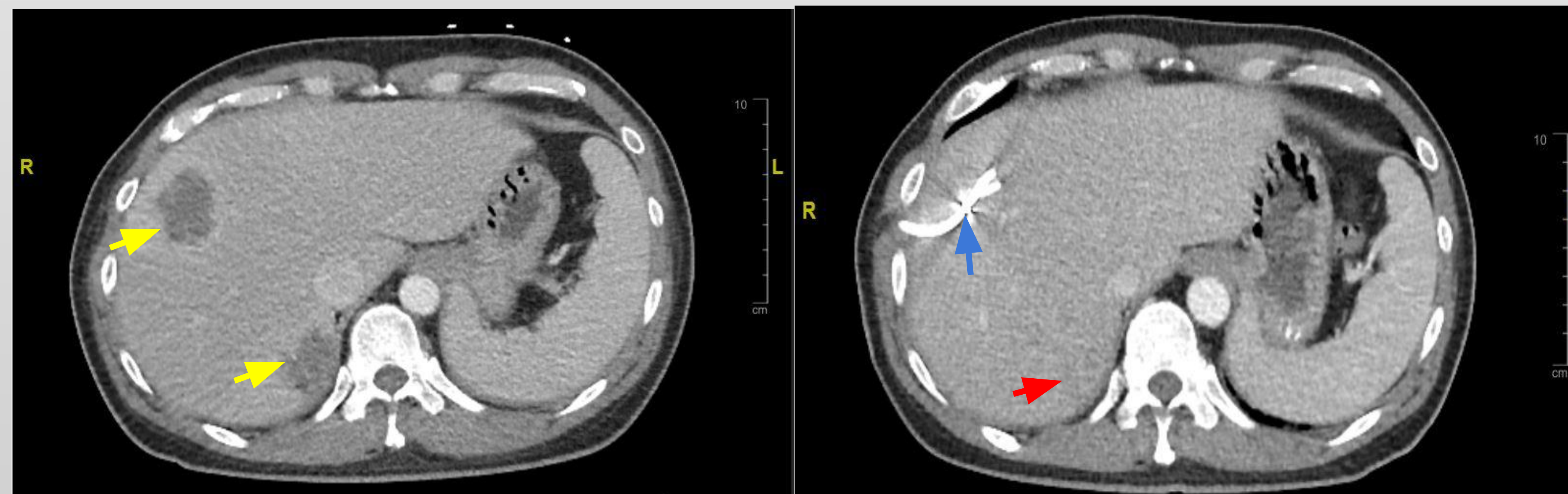


Image 1. CT abdomen/pelvis on arrival. Note anterior and medial right liver lobe masses (yellow arrows)

Image 2. CT abdomen/pelvis following percutaneous drainage placement and completion of 2 week course of IV antibiotics. Note presence of abscess drain (blue arrow) in right anterior lobe of liver, as well as significant improvement of right medial lobe abscess (red arrow)



Image 3. Example of pathogenic K1 and K2 strains on sheep blood agar. Pathogenic strains demonstrate hypermucoviscosity via positive string sign (loop is touched to colony, then pulled up. Positive if ≥ 5mm) [1]

DISCUSSION

- Mortality occurs in 11% of patients [2]; this increases with presence of metastatic infection
- *K. pneumoniae* serotypes K1 and K2 are pathogenic due to hypermucoviscosity (**Image 3**) leading to resistance to phagocytosis, complement system, and intracellular death by neutrophils [3]
- Difficulty with source control increases metastatic disease, mortality due to fulminant sepsis, and lifelong deficits
- Delayed therapy due to inaccessible abscesses may lead to surgical resection and delayed resolution
- Our therapy demonstrated resolution of patient's subcentimeter abscesses and improvement in large inaccessible lesion via prompt systemic antibiotics
- This case demonstrates a rare syndrome in a patient with no prior risk factors [4], with a rare presentation initially suggestive of metastatic disease rather than infectious process.
- Given the disease's rarity, it is crucial for proper evaluation and management to take place in order to prevent mortality and complications

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