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Leaching Liver Lesions: A Case of Invasive *Klebsiella Pneumoniae* Liver Abscess Syndrome

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About IKPLAS

Incidence/Epidemiology

Klebsiella pneumoniae is the leading cause of pyogenic liver abscess in East Asia. 8-15% of patients have infections at other anatomical sites which is considered invasive *K. pneumoniae* liver abscess syndrome (IKPLAS). Mortality ranges from 11-31% and is shown to be decreasing. Prevalence in Asian populations may be related to a more virulent phenotype and genotype as compared to those found outside of Asia.

Pathophysiology

Invasive strains infect the liver from the gastrointestinal tract. Underlying biliary disease is the most common identifiable cause of pyogenic liver abscess in a study done in New York City, as well as other studies cited by this group. Other causes included cancer, surgery, pancreatitis, diverticulitis, and appendicitis. Underlying disease (such as DM, cancer, or liver cirrhosis) appears to predispose patients to developing extrahepatic infection.

Presentation

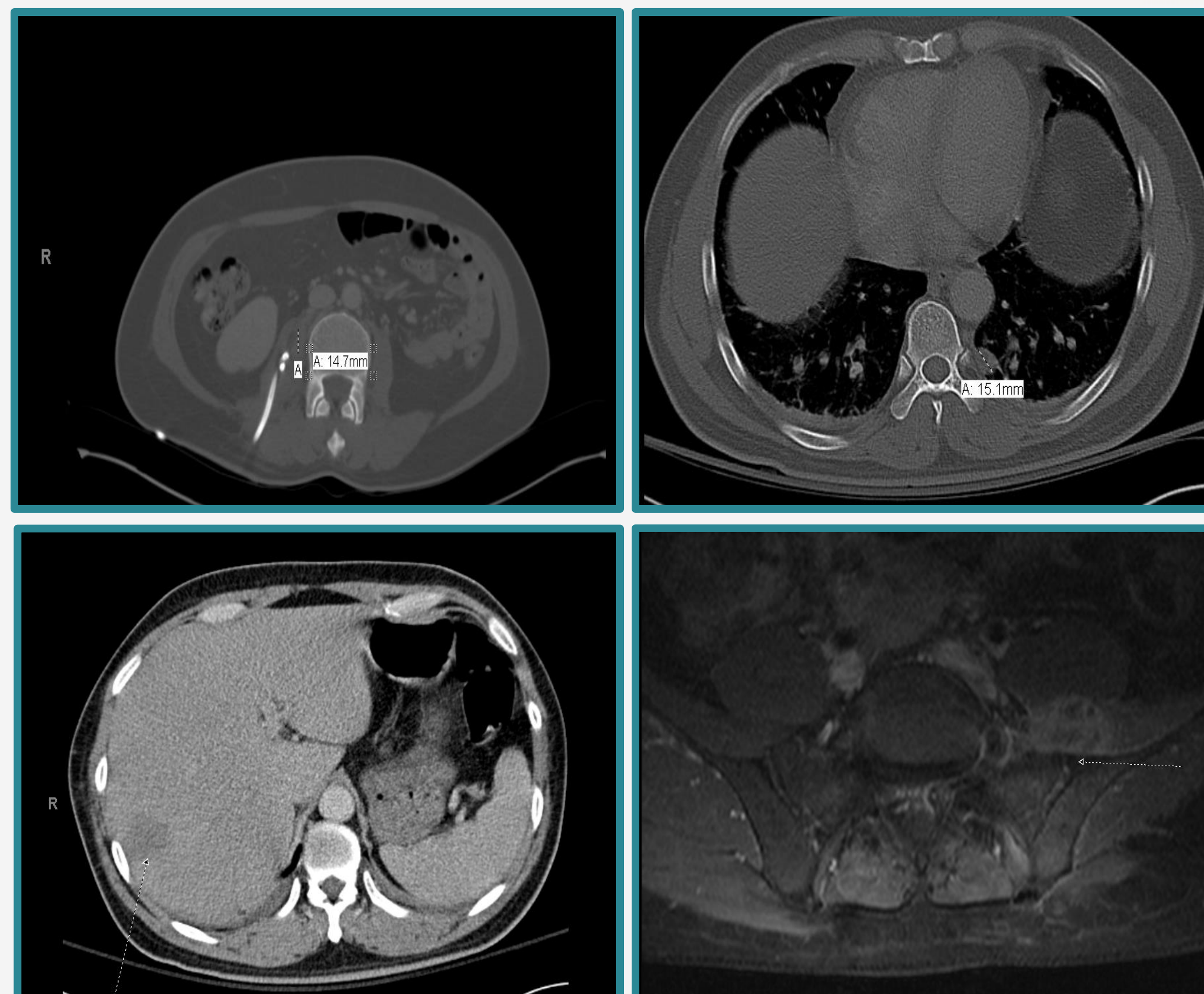
Fever and right upper quadrant abdominal pain are the most commonly reported symptoms. Extra-hepatic complications from bacterial dissemination include lung involvement, endophthalmitis, meningitis, necrotizing fasciitis, etc. Lungs, CNS, and eyes are most common in patients of Asian descent with diabetes presenting with *K. pneumoniae* bacteremia, endophthalmitis, meningitis, or other extrahepatic infections, work-up for a liver abscess is indicated. More patients presented with altered mental status and/or septic shock, and required ICU care with IKPLAS as compared to non-metastatic disease.

Diagnosis

CT scans are more sensitive than ultrasounds in diagnosing liver abscesses. Bilobar liver involvement is common in IKPLAS. Patients with IKPLAS have smaller liver abscesses as compared to non-metastatic patients, likely because the metastatic sites caused more problems and allowed for earlier presentation and diagnosis. Isolates from blood and percutaneous drainage will demonstrate *K. pneumoniae*. PCR may be useful for rapid diagnosis. CT was the most common method of diagnosis, followed by abdominal ultrasound in the NYC group.

Treatment

IV antimicrobial therapy (based on susceptibilities) with or without percutaneous drainage is now the preferred treatment over surgical intervention. Duration of treatment may be determined based on response as monitored by ultrasound of the liver and resolution of fever and leukocytosis. Metastatic infections are more difficult to treat.



Case Presentation

An otherwise healthy 42-year-old Vietnamese man who immigrated to the United States six years prior presented to the emergency department with a nine-day history of back pain. The patient reported his pain worsened acutely just prior to presentation when lifting a heavy object. He also described numbness of the left leg. At presentation, the patient was septic. Because of this, a MRI of the lumbar spine was obtained which demonstrated multiple paraspinal and gluteal region abscesses. A chest CT demonstrated a 2cm right hepatic lobe hypoattenuating lesion suggestive of an abscess as well as multiple pulmonary nodules with peripheral and upper lobe predominance. Blood cultures drawn prior to initiation of antibiotics grew out *Klebsiella pneumoniae*. Given the patient's ethnic background and the organism isolated, the liver lesion was suspected as the primary abscess, with hematogenous dissemination to the lungs, paraspinal and gluteal regions, this being consistent with IKPLAS.

The patient underwent drainage of the piriformis muscle abscess which also yielded *K. pneumoniae*. When cultures returned positive for *K. pneumoniae*, the antibiotic regimen was narrowed to ceftriaxone based on organism susceptibility. Despite appropriate antibiotic therapy, he went on to develop further abscesses as well osteomyelitis of the L1 and L2 vertebrae. He underwent subsequent abscess drainage after which the patient defervesced and his back pain improved. The patient was eventually discharged on ceftriaxone 2gm every 12 hours and received a total of eight weeks of antibiotics.

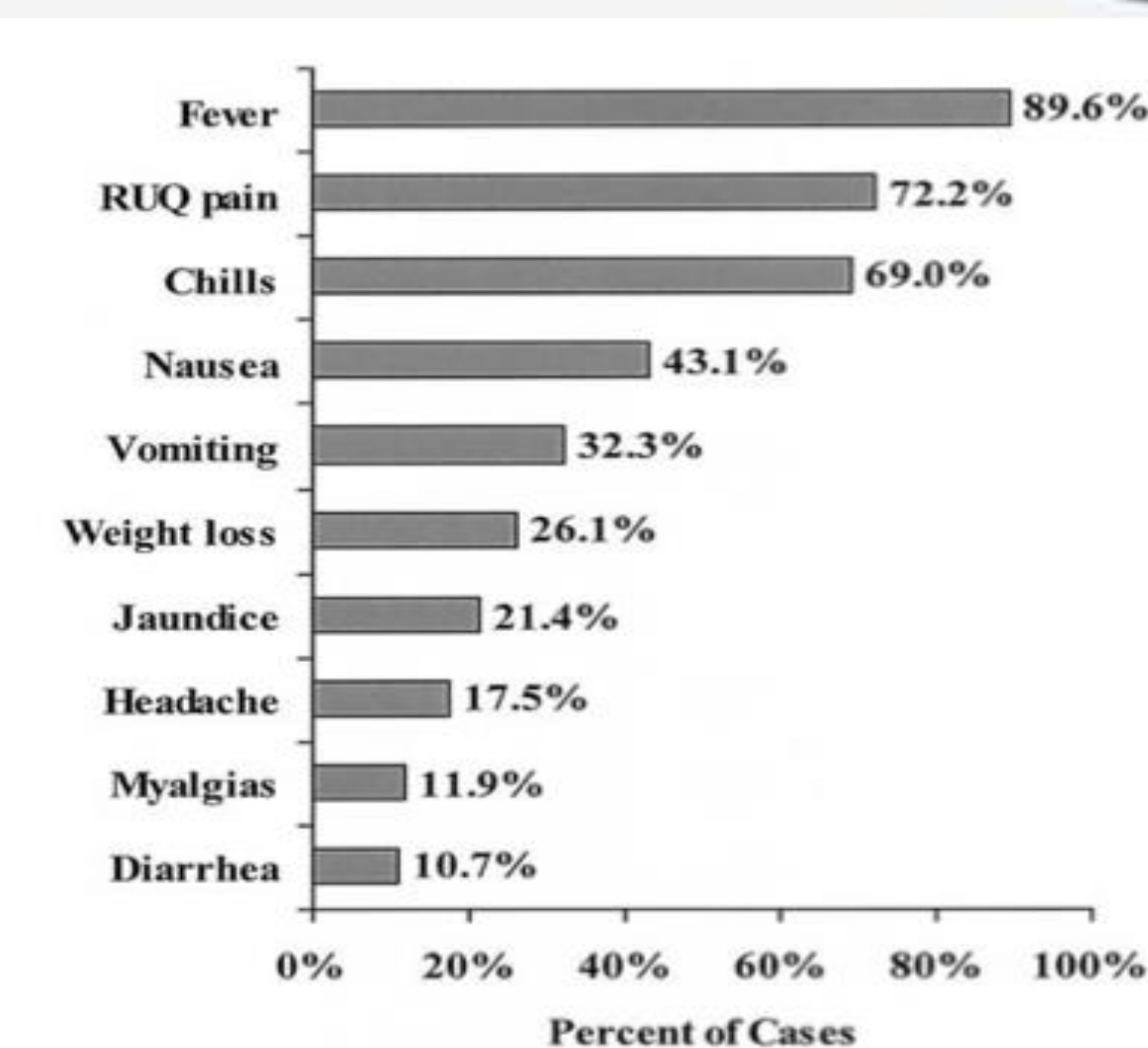


Figure 1. Presenting symptoms in cases of pyogenic liver abscess. RUQ, right upper quadrant.

Joseph Rahimian, Tina Wilson, Valerie Oram, Robert S. Hozman. Pyogenic Liver Abscess: Recent Trends in Etiology and Mortality. Clin Infect Dis 2004; 39:1654-59.

Discussion

Invasive *Klebsiella pneumoniae* liver abscesses syndrome (IKPLAS) is a rare clinical disease entity defined as a liver abscess and disseminated *Klebsiella* infection. It is often seen in patients of Asian descent and is increasing in prevalence within the United States. IKPLAS is associated with a high degree of morbidity and mortality. It should be considered in septic patients who are found to have liver abscesses and are of Asian descent.

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