



Low Back Pain: A Rare Presentation of *Klebsiella pneumoniae* Liver Abscess

Yu-Chen Tseng¹, Yu-Cheng Wu², Sheng-Kang Chiu³, Ching-Hui Hsu¹

¹Department of Internal Medicine, Division of Gastroenterology and Hepatology, National Defense Medical Center, Tri-Service General Hospital, ²Department of Radiology, National Defense Medical Center, Tri-Service General Hospital, ³Department of Internal Medicine, Division of Infectious Diseases and Tropical Medicine, National Defense Medical Center, Tri-Service General Hospital, Taipei, Taiwan, ROC

Pyogenic liver abscess (PLA) is a global emerging infectious disease. The common presentations of PLA include fever, abdominal pain, anorexia, weight loss, and malaise. In Taiwan, *Klebsiella pneumoniae* is the most frequently isolated pathogen from PLA. Most cases of *K. pneumoniae* liver abscess (KLA) develop metastatic infections at other sites that cause severe complications, such as endophthalmitis, meningitis, or brain abscess. Herein, we describe a case of KLA that unusually presented as lower back pain. The patient received antibiotic therapy and underwent drainage procedure. He was eventually discharged in a stable condition, without any complications caused by the metastatic infections.

Key words: Pyogenic liver abscess, *Klebsiella pneumoniae* liver abscess, low back pain

INTRODUCTION

Pyogenic liver abscess (PLA) is the most common type of intra-abdominal abscess.¹ In Taiwan, *Klebsiella pneumoniae* is the most commonly isolated pathogen from PLA.^{2,3} *K. pneumoniae* liver abscess (KLA) is recognized as an invasive liver abscess syndrome because the infection can spread to distant sites, which may cause complications, such as meningitis or endophthalmitis.³ The definitions of invasive liver abscess syndrome are divided into clinical definitions and microbiological definitions.³ KLA with extrahepatic metastatic complications, particularly meningitis, endophthalmitis, and necrotizing fasciitis, is defined as “clinically definite invasive syndrome.”³ The “microbiologically definite invasive syndrome” is defined as KLA caused by the hypermucoviscous phenotype associated with the K1 or K2 serotype.³ The most common metastatic site of infection has been reported as the lung in America (6/38 cases) and the central nervous system in Taiwan (21/428 cases).³ However, KLA-related muscular and skeletal system invasion has rarely been described (<3% of cases).³ Patients with KLA usually present with fever of unknown origin, chills, anorexia, nausea, vomiting, weight loss, right upper quadrant abdominal pain, and/or jaundice.⁴

In the present report, we describe a case of KLA with an atypical presentation of lower back pain, followed by a review of the literature.

CASE REPORT

A 46-year-old man presented to the emergency department with a 1-week history of right lower back pain. He had no medical history of diabetes mellitus. Five months prior to admission, he had undergone percutaneous drainage of a PLA at another hospital along with unknown intravenous antibiotic agent for 2 weeks period and had been discharged in a stable condition. The causal pathogen of his first liver abscess was not known. The follow-up image study of abdominal sonography showed no residual liver abscess at that hospital 3 months prior to this admission.

On admission, he was afebrile with stable vital signs. There was no abnormal findings were noted on physical examination, except for the abdominal examination findings with mild tenderness in the right upper quadrant on deep palpation. The results of laboratory tests were as follows: White cell count of 13,230/mm³, hemoglobin of 13.6 g/dL, platelet count of 355,000/mm³, and C-reactive protein level of 11.34 mg/dL (reference value, <0.5 mg/dL); the results of renal and liver functional tests, including alkaline phosphatase levels, were within normal limits. Blood cultures yielded negative results. Computed tomography (CT) of the abdomen showed a large cystic lesion (>10 cm), with an irregularly thickened wall over the inferior segment of the right lobe of the liver [Figure 1a]. The lesion also involved the right quadratus lumborum muscle

Received: January 1, 2015; Revised: February 12, 2015;
Accepted: April 27, 2015

Corresponding Author: Dr. Ching-Hui Hsu, Department of Internal Medicine, Division of Gastroenterology and Hepatology, National Defense Medical Center, Tri-Service General Hospital, Taipei, Taiwan, ROC. Tel: +886-2-87927409; Fax: +886-2-87927139. E-mail: ndmchsu30@gmail.com

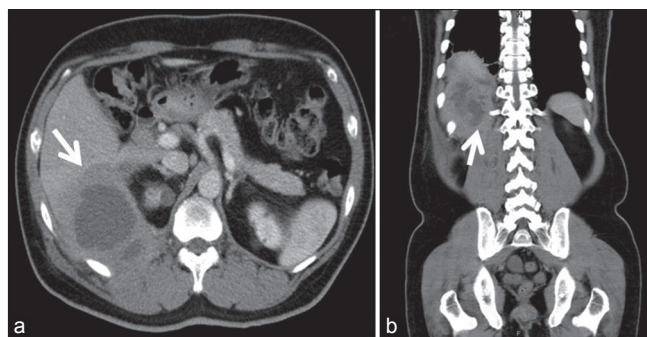


Figure 1. (a) Axial view of abdomen computed tomography (CT): A large cystic lesion (>10 cm) with irregular wall thickening is noted over the inferior segment of the right lobe of the liver. (b) Coronal view of abdomen CT: The lesion involves the right quadratus lumborum muscle, the right erector spinae muscle, and the inferior segment of the right lobe of the liver

and the right erector spinae muscle [Figure 1b]. After admission, the patient underwent fluid resuscitation, antibiotic therapy with ceftriaxone and metronidazole, and percutaneous drainage of the abscess. Aspiration from the abscess yielded *K. pneumoniae*, but no evidence of bacteremia was noted. The patient's clinical condition remained stable, and there was no found that the *K. pneumoniae* had spread to sites other than the spinal muscles. Moreover, there were no complications associated with infection at these sites. The patient eventually required drainage of the abscess and 4 weeks of systemic antibiotic treatment to recover completely.

DISCUSSION

Pyogenic liver abscess is a global emerging infectious disease. If inadequate treatment, these lesions are invariably fatal.⁴ The typical clinical presentation of KLA includes fever, chills, and right upper quadrant abdominal pain.^{1,5} Some patients may present with nausea, vomiting, anorexia, weight loss, and malaise.^{1,3,5} In the present case, the patient was afebrile and did not have any abdominal pain or general malaise. His only symptom was right lower back pain. This uncommon manifestation may be due to the spread of the infection from the liver to the spinal musculature.

In Asia, including Taiwan, community-acquired KLA is more likely to spread to other sites as compared to PLA caused by other pathogens. KLA has been associated with endophthalmitis, meningitis, brain abscesses, and septic pulmonary embolism.^{2,3} KLA had been defined as a new invasive syndrome by Siu et al.³ The major observed risk factor for invasive liver abscess syndrome is diabetes mellitus with poor glycemic control in which impaired neutrophil phagocytosis is believed to play a major role.^{2,3,6} However, KLA can occur in the absence of a predisposing medical condition. Liao et al. reported the case of a patient with

type 2 diabetes mellitus who had a KLA and bacteremia; after administration of systemic antibiotics and adequate drainage, the patient developed a *K. pneumoniae*-associated pyogenic abscess of the psoas muscle.⁷ The present case is the first case in which a healthy individual developed a KLA that involved the spread of the infection to the paraspinal muscles.

Treatment of PLA, including KLA, should consist of adequate systemic antibiotic treatment and early percutaneous drainage.¹ The duration of treatment should be determined by the extent of infection and the patient's clinical response to treatment. Drainage techniques include CT-guided or ultrasound-guided percutaneous drainage (with or without catheter placement). In cases where there is a single abscess larger than 5 cm, catheter drainage is the preferred approach. Surgical drainage is indicated in cases where there are multiple or loculated abscesses or in cases of inadequate percutaneous drainage. Drainage should be continued until the drainage volume is minimal. Resolution of the abscess can be confirmed with ultrasonography or CT. The antibiotic therapy should be designed based on the culture results and should be continued at least for 4-6 weeks. PLA rarely recurs in cases following successful and adequate treatment. However, PLA may recur in a patient due to inadequate drainage, inappropriate systemic antibiotic treatment, or lack of follow-up. In the case, he had recurrent liver abscess may be due to inappropriate systemic antibiotic treatment and lack of follow-up.

CONCLUSION

The case presented here highlights three aspects of KLA for clinicians: First, in cases with unexplained lower back pain without obvious infectious signs or symptoms, a PLA should be considered. Second, adequate drainage and antibiotic treatment of a PLA is important for preventing a recurrent KLA. Third, appropriate follow-up is necessary to evaluate the clinical response to therapy.

REFERENCES

1. Lee SS, Chen YS, Tsai HC, Wann SR, Lin HH, Huang CK, *et al.* Predictors of septic metastatic infection and mortality among patients with *Klebsiella pneumoniae* liver abscess. *Clin Infect Dis* 2008;47:642-50.
2. Wang JH, Liu YC, Lee SS, Yen MY, Chen YS, Wang JH, *et al.* Primary liver abscess due to *Klebsiella pneumoniae* in Taiwan. *Clin Infect Dis* 1998;26:1434-8.
3. Siu LK, Yeh KM, Lin JC, Fung CP, Chang FY. *Klebsiella pneumoniae* liver abscess: A new invasive syndrome. *Lancet Infect Dis* 2012;12:881-7.
4. Zhu X, Wang S, Jacob R, Fan Z, Zhang F, Ji G. A 10-year retrospective analysis of clinical profiles,

A rare cause of low back pain

- laboratory characteristics and management of pyogenic liver abscesses in a chinese hospital. Gut Liver 2011;5:221-7.
5. Chan KS, Yu WL, Tsai CL, Cheng KC, Hou CC, Lee MC, *et al.* Pyogenic liver abscess caused by *Klebsiella pneumoniae*: Analysis of the clinical characteristics and outcomes of 84 patients. Chin Med J (Engl) 2007;120:136-9.
 6. Chan KS, Chen CM, Cheng KC, Hou CC, Lin HJ, Yu WL. Pyogenic liver abscess: A retrospective analysis of 107 patients during a 3-year period. Jpn J Infect Dis 2005;58:366-8.
 7. Liao PY, Chiang WC, Chen SY, Su CP, Wang JT, Hsueh PR. Rapidly fatal gas-forming pyogenic psoas abscess caused by *Klebsiella pneumoniae*. Clin Infect Dis 2007;44:1253-5.

