



A LARGE PYOGENIC LIVER ABSCESS REVEALED BY HEPATIC GAS IN PLAIN RADIOGRAPHY AND COMPLICATED WITH MASSIVE RIGHT-SIDED PLEURAL EFFUSION

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| <p>Article Info Received 15/06/2015 Revised 27/06/2015 Accepted 22/07/2015</p> <p>Key words: <i>Klebsiella pneumoniae</i> liver abscess, Pleural effusion.</p> | <p>ABSTRACT <i>Klebsiella pneumoniae</i> liver abscess is an invasive disease, and prompt diagnosis and treatment are important for a better outcome. The authors reported the case of a 52-year-old male with poorly controlled diabetes mellitus who presented with right upper quadrant abdominal pain. The diagnosis of liver abscess was implied by abnormal liver function tests and hepatic gas in routine plain radiography. A gas-forming liver abscess greater than 5 cm was noted in computed tomography and <i>K. pneumoniae</i> was isolated from both blood and the abscess. Initially, he received percutaneous drainage and however, the effectiveness was poor. He subsequently underwent surgical drainage and the symptoms improved post-operatively. Massive right-sided pleural effusion developed after surgery and he was successfully treated by repeated thoracenteses.</p> |
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INTRODUCTION

Klebsiella pneumoniae liver abscess is occasionally complicated with metastatic infections and especially for large abscesses, early effective drainage is important. Our patient developed a large gas-forming liver abscess and presented with hepatic gas in plain radiography which had been rarely reported. Besides, the patient had massive right-sided pleural effusion one week after presentation. He was successfully treated for liver abscess and pleural effusion with full recovery.

CASE REPORT

A 52-year-old male who had a history of diabetes mellitus suffered from right upper abdominal pain for 3 days and visited the emergency department. He had an initial blood pressure of 105/73 mmHg, heart rate of 122 beats/min, and ear temperature of 37.2°C. Physically, the abdomen was soft and there was right upper quadrant knocking pain. The white blood cell (WBC) count increased (11,280 cells/ μ L) with neutrophilia (neutrophil of 95%) and bandemia (band neutrophil of 38%).

Biochemistry revealed a blood sugar of 493 mg/dl, glycohemoglobin of 16.9%, total bilirubin of 1.92 mg/dL, aspartate aminotransferase of 423 U/L, and alanine aminotransferase of 635 U/L. The indirect hemagglutination test for amebiasis was negative. Chest radiography at arrival showed the presence of gas in the right upper quadrant of abdomen. [Fig 1A]

Contrast-enhanced computed tomography (CT) of the abdomen revealed a huge gas-forming liver abscess. [Fig 2] Later, blood and abscess cultures grew ceftriaxone-susceptible *K. pneumoniae*.

He was promptly treated with intravenous antibiotics (ceftriaxone plus metronidazole) and ultrasound-guided percutaneous drainage. Insulin injection was used to control blood sugar. Given the unsatisfactory effectiveness of percutaneous drainage, surgical drainage of liver abscess was performed one the next day and the clinical condition improved post-operatively.

One week later, marked dyspnea on exertion developed and massive right-sided pleural effusion was



observed at the follow-up chest radiography. [Fig 1B] Repeated drainage by thoracentesis was carried out and the pleural fluid analysis showed a turbid exudate with a WBC

count of 81 cells/ μ L and a negative culture. Four weeks later, he was discharged with nearly complete evacuation of pleural effusion.

Figure 1. (A) The chest radiography at arrival showing the presence of gas in the right upper quadrant of abdomen (arrows). (B) The follow-up chest radiography one week later showing accumulation of right-sided pleural effusion.

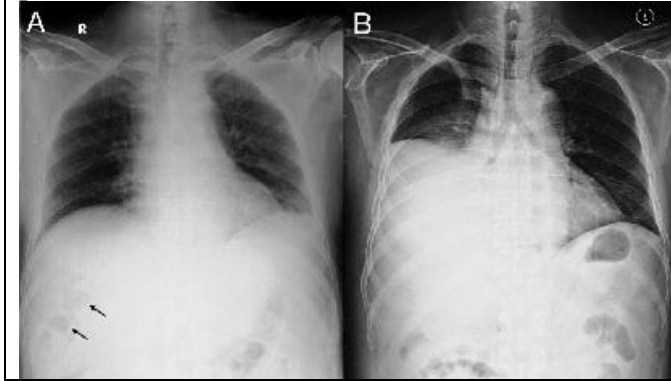
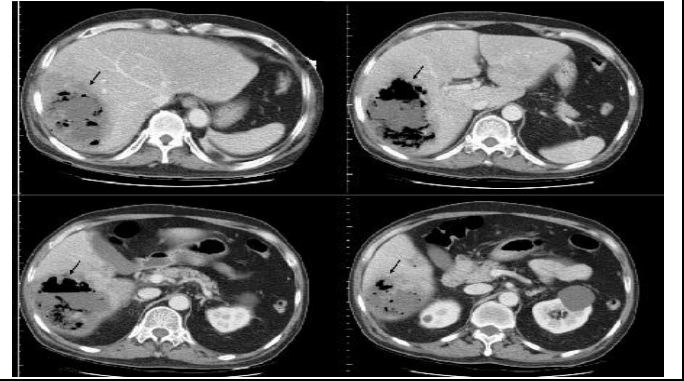


Figure 2. Abdominal computed tomography revealing a huge gas-forming liver abscess (arrows).



DISCUSSION AND CONCLUSION

Pyogenic liver abscess is a potentially fatal disease and the most common pathogen in Taiwan is *K. pneumoniae*. (Chen SC et al) [1]. About a quarter of *K. pneumoniae* liver abscess would be complicated by metastatic infections of which lungs, central nervous system (CNS), and eyes are the most common sites, and the invasiveness of *K. pneumoniae* could be attributed to several virulence factors. (Siu LK et al) [2]. In recent decades, *K. pneumoniae* liver abscess has emerged as a global disease, and early recognition and treatment are warranted to prevent metastatic infections which are often difficult to treat. (Siu LK et al) [2]. Especially in Asians, diabetes mellitus is an important risk factor of *K. pneumoniae* liver abscess and meanwhile, strict sugar control might decrease metastatic infections. (Siu LK et al) [2]. In patients with diabetes mellitus who present with *K. pneumoniae* bacteremia, investigation for liver abscess is indicated and CT would be the most sensitive imaging modality. (Siu LK et al, Zibari GB et al) [2,3]. As well as

appropriate initial antibiotics, adequate drainage of the abscess is of considerable importance. (Siu LK et al) [2]. In comparison with percutaneous drainage that is widely used, surgical drainage would provide a better outcome for patients with a large liver abscess more than 5 cm through breakdown of loculations and complete drainage of viscous pus and necrotic debris. (Tan YM et al) [4]. The majority of metastatic infections in *K. pneumoniae* liver abscess are not seen at initial presentation and about one quarter of metastatic infections occur more than 3 days after presentation. (Lee SS et al) [5]. Both pleural infection and subphrenic inflammation are possible causes of unilateral exudative pleural effusion (McGrath EE et al) [6]; thus, the right-sided pleural effusion in the present case might be ascribed to the increased subphrenic inflammation caused by surgery or the delayed manifestation of metastatic pleural infection. Since antibiotics might interfere with the culture result of pleural fluid, uncertainty still existed about whether metastatic pleural infection did occur in this patient.

REFERENCES

1. Chen SC, Lee YT, Yen CH et al. (2009). Pyogenic liver abscess in the elderly: clinical features, outcomes and prognostic factors. *Age Ageing*, 38(3), 271-276.
2. Siu LK, Yeh KM, Lin JC, Fung CP, Chang FY. (2012). *Klebsiella pneumoniae* liver abscess: a new invasive syndrome. *Lancet Infectious Diseases*, 12(11), 881-887.
3. Zibari GB, Maguire S, Aultman DF, McMillan RW, McDonald JC. (2000). Pyogenic liver abscess. *Surgical Infections (Larchmt)*, 1(1), 15-21.
4. Tan YM, Chung AY, Chow PK et al. (2005). An appraisal of surgical and percutaneous drainage for pyogenic liver abscesses larger than 5 cm. *Annals of Surgery*, 241(3), 485-490.
5. Lee SS, Chen YS, Tsai HC et al. (2008). Predictors of septic metastatic infection and mortality among patients with *Klebsiella pneumoniae* liver abscess. *Clinical Infectious Diseases*, 47(5), 642-650.
6. McGrath EE, Blades Z, Needham J, Anderson PB. (2009). A systematic approach to the investigation and diagnosis of a unilateral pleural effusion. *International Journal of Clinical Practice*, 63(11), 1653-1659.

