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LETTER TO THE EDITOR

FATAL GAS-FORMING PYOGENIC LIVER ABSCESS DUE TO *Klebsiella pneumoniae*

Shanghai, Dec 28th, 2012

Dear Editor,

Pyogenic liver abscess (PLA) is an uncommon disease with an annual incidence rate ranging from two to 45 cases per 100,000 hospital admissions worldwide[1]. Gas-forming pyogenic liver abscess (GFPLA) is even rarer, which accounts for 7% to 24% of PLA[4]. It is reported that GFPLA only accounted for less than 4% of all PLA over an eight-year period in a local hospital of Brunei[2]. Here we present a rare case of GFPLA due to *Klebsiella pneumoniae* (*K. pneumoniae*).

A 79-year-old female with poorly-controlled diabetes mellitus (DM) was admitted to our hospital with a three-day history of fever and progressive abdominal pain in the right upper quadrant. On physical examination, she was febrile and mild right upper quadrant tenderness was observed. Laboratory data showed an elevated white blood cell (WBC) count of 17.3×10^9/L with hyperglycemia and minor changes in liver enzymes. Abdominal contrast-enhanced computed tomography (CT) scan revealed a huge abscess with gas formation in the right lobe of the liver and the abscess was measured as 14 cm in diameter (Fig. 1). The patient underwent CT-guided percutaneous catheter drainage and was given broad spectrum intravenous antibiotic (imipenem/cilastatin) and insulin. However, her condition deteriorated and was complicated by septic shock and multiple organ dysfunction syndrome (MODS). She subsequently died five days after admission. *K. pneumoniae* was isolated from both blood and pus.

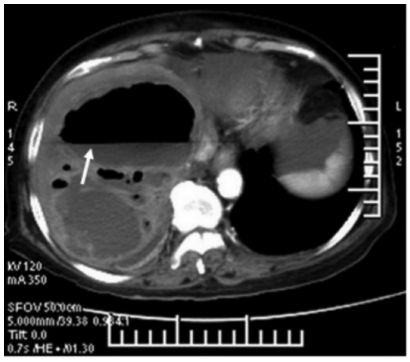

Fig. 1 - Contrast-enhanced computed tomography scan of the abdomen showing a huge gas-forming abscess with an air-fluid level in the right lobe of the liver (arrow).

GFPLA is uncommon in western countries and most reports on GFPLA came from the East, for example Taiwan[2,4]. *K. pneumoniae* has been emerging as the most common pathogen of PLA in the Asian population, especially GFPLA[4,6]. A clinical study revealed that *K. pneumoniae* was isolated from pus in all patients who had GFPLA except two ones[4]. Besides *Klebsiella* spp., other organisms were reported to cause GFPLA including *Escherichia* spp., *Salmonella* spp. and *Clostridium* spp.[2]. GFPLA is commonly associated with underling DM. Hyperglycemia is an important risk factor for GFPLA and poor control of DM plays a role in the development of GFPLA[2,5].

The clinical manifestations of GFPLA which usually include fever and right upper quadrant abdominal pain are not different from those of non-GFPLA[7]. However, some clinical differences exist. Statistically, among patients with PLA, the incidence of bacteremia and septic shock in GFPLA patients is higher than that in non-GFPLA patients[5]. A large case series study from Taiwan which involved 83 GFPLA patients and 341 non-GFPLA patients showed that septic shock occurred in 32.5% of patients with GFPLA while it occurred in only 11.7% of patients with non-GFPLA[3]. Moreover, duration of symptoms in GFPLA patients is much shorter[3].

The diagnosis of GFPLA can be made by demonstrating gas in the liver parenchyma through hepatic imaging, including ultrasonography, CT scan and careful evaluation of abnormal gas patterns on plain abdominal radiographs. Furthermore, CT scan is the most sensitive imaging modality[2]. On plain films air-fluid levels and mottled gas patterns are the most common findings, but gas formation in the liver parenchyma is reported to be noted in only up to 36% of patients with GFPLA on plain radiographs[4].

To manage GFPLA effectively, appropriate antibiotics and early adequate drainage that can be either percutaneous or surgical are compulsory. But this is insufficient in a minority of patients, such as the patient described above. Statistics showed that the overall mortality rate in GFPLA patients was higher than that in non-GFPLA patients[3,7]. Remarkably, the mortality of GFPLA is around 27.7% to 37.1% in spite of aggressive treatment[4]. Even so, early diagnosis and prompt treatment can reduce subsequent mortality.

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