

Infected Hepatic Cyst in A Patient Diagnosed by Air-fluid Level in An Abdominal Plain Film – A Case Report

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Abstract

Simple hepatic cyst is usually asymptomatic and requires no treatment, and its complication, such as hepatic cyst infection, can occur. This report describes a 68-year-old man with a large simple hepatic cyst at left lobe diagnosed 2 months before hospitalization in computed tomography of abdomen examination. One week before admission, he received panendoscopy which revealed esophageal candidiasis in local clinics. Before this admission, he came to our outpatient clinic and presented with intermittent and aggravated epigastric pain and 6 kgs weight loss. He gave no history of fever, chills and bowel habit change. Physical examination revealed palpable mass, tenderness and tympanic sound on percussion at epigastric region. Abdominal standing X-ray film revealed a cavitory lesion with air-fluid level. A gas-forming infected hepatic cyst was highly suspected. Routine laboratory tests were unremarkable, except C-reactive protein showed 16.22 mg/dl. Percutaneous transhepatic drainage of the cyst was made right away for further biological diagnosis and treatment. Milky yellowish fluid was obtained with fishy smelling odor. The drainage culture was *Bacteroides capillosus*. This is the first case report of infected hepatic cyst caused by the *Bacteroides capillosus*. (J Intern Med Taiwan 2021; 32: 50-55)

Key Words: Infected hepatic cyst, Air-fluid level, *Bacteroides capillosus*

Introduction

Simple hepatic cysts are asymptomatic and detected incidentally by abdominal ultrasonography (US) or abdominal computed tomography (CT) examinations. They are usually asymptomatic and requires no treatment^{1,2}. Their complication, such as hepatic cyst infection, can occur. We reported a case

of gas-forming infected hepatic cyst with air-fluid level in abdominal standing X-ray film. The complaint of epigastric pain was resolved after treating with percutaneous transhepatic drainage.

Case Report

A 68-year-old male presented to our emergency room (ER) two month before admission due to

sudden onset right upper quadrant abdominal pain. No tenderness and nor palpable mass was found in physical examination of abdomen. Contrast-enhanced abdominal CT revealed a simple hepatic cyst (10.8 × 8.9 × 6.3 cm) in left lobe (segment 2 and segment 3) of the liver. (Figure 1). His abdominal pain subsided after the treatment with painkiller medication and outpatient clinics follow-up was suggested. After leaving ER, he suffered from intermittent upper abdominal discomfort, progressed anorexia in the following 2 months and weight loss of 6 kgs (body weight from 66 to 60 kgs). He visited a local clinic. Panendoscopy was performed for studying the cause of epigastralgia which showed gastric ulcer and esophageal candidiasis. Proton pump inhibitor was given but in vain, and anorexia persisted. Then he was referred to our outpatient clinic for further evaluation.

Initial physical examination of his abdomen showed a palpable bulging mass with tympanic sound on percussion and moderate tenderness at upper abdomen. Abdominal standing X-ray film showed a cavitory lesion with air-fluid level at upper abdomen (Figure 2). Correlated with previous CT image, the site of the cavitory lesion with air-fluid level in X-ray film seemed the same as the site of hepatic cyst at left lobe in CT and the size of the cavitory lesion with air-fluid level (12cm in width) seemed increased compared with the size of the hepatic cyst (8.9 cm in width) (Figure 1 and Figure 2). Infected hepatic cyst was highly suspected and admission was arranged. Patient reported no history of systemic disease and gave no history of fever, bloating, dysphagia, bowel habit change or melena. The evaluation of vital sign revealed: the temperature was 36.5°C, the pulse 96 beats per minute, the respiratory rate 18 breaths per minute and the blood pressure 137/68 mmHg. Examinations of the conjunctiva, sclera, cardiovascular, respiratory system was unremarkable. Bowel sounds were normoactive. No splenomegaly was found. A palpa-

ble bulging mass with tympanic sound on percussion and moderate tenderness was found at upper abdomen. Other abdominal areas were soft and non-tender without rigidity, muscle guarding nor rebounding pain.

After admission, abdominal US showed a big

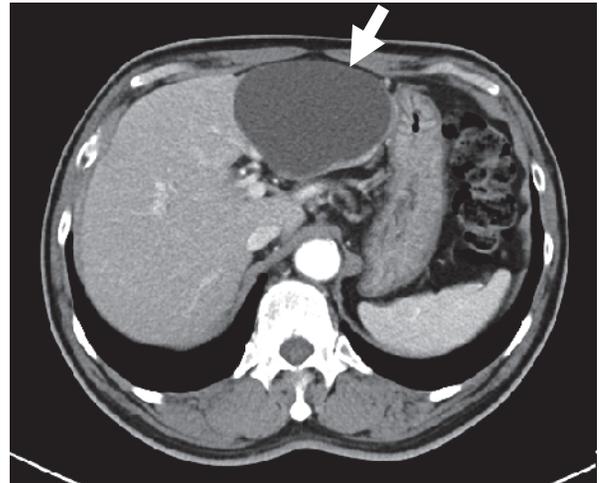


Figure 1. Abdominal computed tomography revealed a 10.8 x 8.9 x 6.3 cm cystic lesion at left lobe of the liver (white thick arrow).



Figure 2. Abdominal standing X-ray film revealed a cavitory lesion (12cm in width, black thick arrow) with an air-fluid level inside (black thin arrow) at upper abdomen.

lesion with much gas contained at upper abdomen and the other content of the lesion was masked by acoustic shadow (Figure 3). Gas-forming hepatic cyst infection was impressed and a pigtail catheter was inserted into the central part of the lesion with ultrasonographic guidance right away. Much gas and pus-like milky yellowish fluid with strong fishy odor was drained out by pigtail catheter. The patient's abdominal pain resolved and hunger sensation was felt soon after pigtail catheter drainage. The reports of laboratory tests in admission are shown in table 1. High C-reactive protein and mild prolong prothrombin time were found. The levels of Serum Glutamic-Oxaloacetic Transaminase (GOT) and Glutamic-Pyruvic Transaminase (GPT) were within normal limits. Anti-HIV antibody was non-reactive.

The analysis of drainage fluid showed positive Rivalta test and 27631 cells/mL of WBC count with 96% neutrophils. Gram stain of drainage fluid showed Gram-positive and Gram-negative bacilli. Drainage fluid culture revealed *Bacteroides capillosus* growth. No organism was detected in the blood cultures. Cytologic examination was negative for malignancy and amoebic trophozoites.

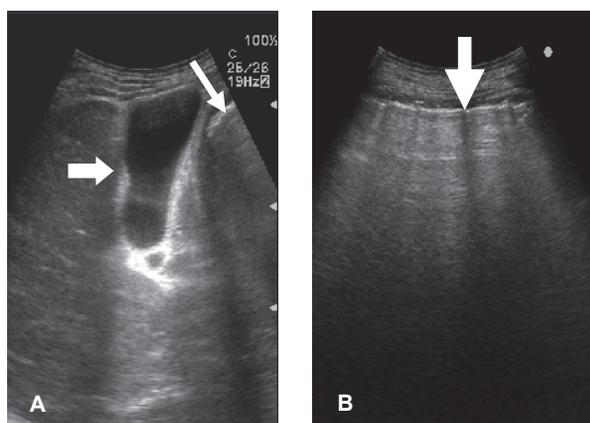


Figure 3. Abdominal ultrasonography, (A) right middle axial line transverse view shows a lesion with strong post acoustic shadow (white thin arrow) just near left border of the Gall bladder (white thick arrow), (B) middle abdominal line transverse view: A big lesion with strong post acoustic shadow (white thick arrow) indicated much air contained.

Intravenous antibiotics with ceftriaxone and metronidazole were administered after drainage. Ceftriaxone was de-escalated to cefazolin after the drainage fluid culture report available. The lesion was irrigated with normal saline through pigtail catheter three times a day, and the amount of drainage decreased. On the 3rd day of admission, there was no abdominal tenderness or palpable bulging mass. The repeat abdominal US on the 6th day after pigtail catheter insertion revealed a 8.5×3.2 cm cystic lesion with a tube like structure inside at left lobe of the liver (Figure 4). Oral fluconazole was

Table 1. Laboratory data on admission

		Value	Reference range
White cell count	(10^3 /dL)	8.67	4.00-11.00
Hemoglobin	(g/dL)	10.6	12.3-18.3
Hematocrit	(%)	31.7	39-53
Platelet count	(10^3 /dL)	219	130-400
C-reactive protein	(mg/dL)	16.22	<0.5
Amylase	(U/L)	30	28-100
Lipase	(U/L)	15.4	13.0-60.0
BUN	(mg/dL)	11	6-12
Creatinine	(mg/dL)	0.63	0.70-1.20
AST	(U/L)	19	<41
ALT	(U/L)	14	<42
Na	(mmol/L)	134	136-145
K	(mmol/L)	4.2	3.5-5.1
Prothrombin time	(sec)	14.3	9.4-12.5
INR		1.21	0.8-1.2
APTT	(sec)	29.5	26.0-38.0

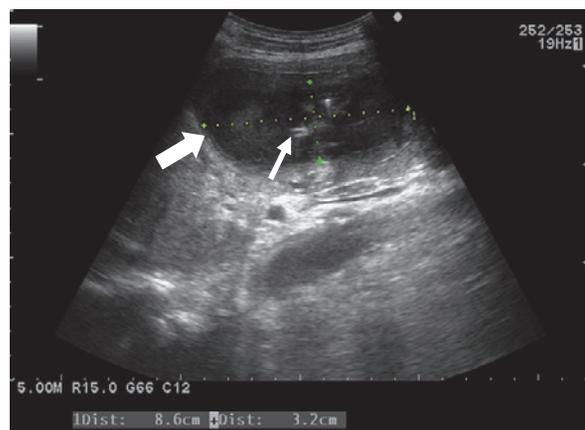


Figure 4. Abdominal ultrasonography on the 6th day post pigtail catheter insertion revealed a 8.5×3.2 cm cystic lesion (white thick arrow) with a tube like structure (white thin arrow) inside at left lobe of the liver.

given for esophageal candidiasis. On the 16th days of admission, the pigtail catheter was removed and repeat US showed decreasing size of hepatic cyst.

The patient took 7- days oral antibiotics after discharge. Follow-up abdominal US (48th day post pigtail catheter insertion) revealed the infected cyst became a 2.3×2.1 cm hypoechoic lesion (Figure 5). Contrast-enhanced abdominal CT (57th day post pigtail catheter insertion) revealed an ill-defined hypodense area 3.3×2.7 cm in left lobe (segment-3) of the liver (Figure 6). The patient received regular follow-up at our outpatient clinic till now. His body weight regained to previous level about 1-2 months after discharge. Panendoscopy was performed again 10 weeks after discharge and revealed healed gastric ulcer and no esophageal candidiasis.

Discussion

The most simple hepatic cysts are congenital and develop more frequently in females and elderly patients¹. The simple hepatic cysts occur in 2.5% of the population and were found more frequently in the right lobe than the left². Most simple hepatic cysts are found incidentally and are usually asymptomatic^{3,4}. However, complications such as infection etc. can occasionally occur^{1,5,6}. Most infected hepatic cysts occurred in patients with autosomal dominant

polycystic kidney disease (ADPKD) who had hepatic cysts^{5,6}. However, there was no renal cyst and no characteristic of ADPKD was found in this case.

In clinic practice, US and CT are the first-line diagnostic tool to locate and differentiate the hepatic cysts⁷. Contrast-CT, MRI and 18F-FDG PET/CT were utilized when hepatic cyst infection was suspected⁸. In this case, abdominal CT studies revealed a large simple hepatic cyst 2 month before admission. At outpatient clinic visit, physical finding was palpable bulging mass with tenderness. Infected hepatic cyst was highly suspected and was proved by a finding of an abdominal plain film - air-fluid level in a cavitory lesion. The US was performed to check the nature of the cyst and revealed a large lesion masked by much post acoustic shallow at left lobe of the liver and near left border of the gallbladder. The much acoustic shallow indicated much gas in the lesion and gas-forming pyogenic hepatic cyst infection were highly suspected.

The gold standard for diagnosing infected hepatic cyst is predominant neutrophil count and culture of aspirated cystic fluid⁹. In our case, percutaneous transhepatic drainage was performed soon for relieving the discomfort of patient and studying the nature of drainage fluid.

Injection of a sclerosing agent after percu-

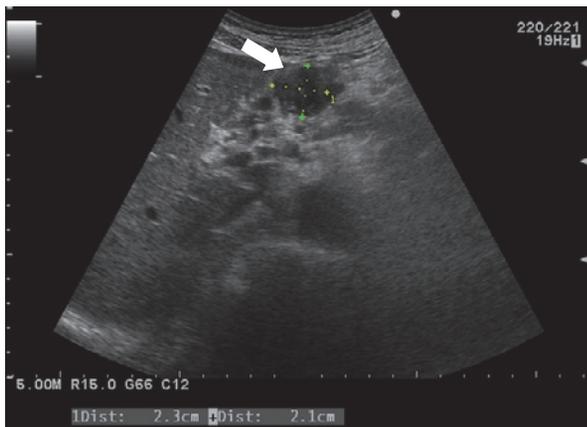


Figure 5. Abdominal ultrasonography on the 48th day post pigtail catheter insertion revealed a 2.3×2.1 cm hypoechoic lesion (white thick arrow) at left lobe of the liver.

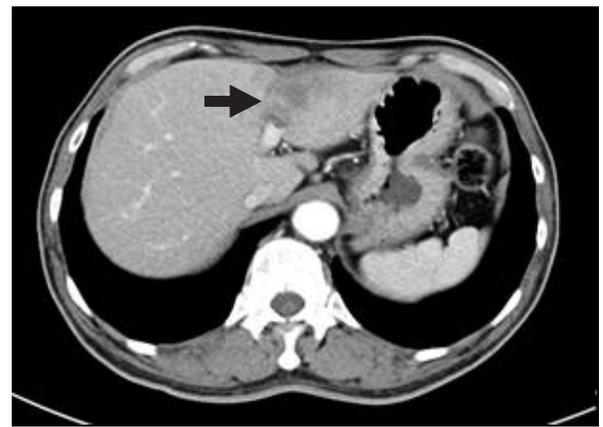


Figure 6. Abdominal computed tomography on the 57th day post pigtail catheter insertion revealed an ill-defined hypodense lesion (black thick arrow) at left lobe of the liver.

taneous transhepatic drainage is not necessary to prevent recurrence of infected hepatic cyst. The sclerosing agent used in simple hepatic cyst kills the secretory cells of the hepatic cyst and the size of the cyst decreased. However, infected hepatic cysts tend not to recur after only drainage⁶. In our case, we performed percutaneous transhepatic drainage and normal saline irrigation to wash out the cell debris. The repeat abdominal US and CT showed cyst remission at last.

In infected hepatic cyst, the most common reported pathogen are *Klebsiella pneumoniae* and *Enterococcus spp*¹⁰. In our case, Gram-positive and Gram-negative bacilli were found in Gram stain of drainage fluid and *Bacteroides capillosus* was cultured from drainage fluid. *Bacteroides* species are obligate anaerobe Gram-negative rods and are gas-forming microorganisms^{11,12}. No growth of Gram-positive bacilli in bacterial culture suggested that the existence of Gram-positive bacilli in Gram stain might result from contamination or the Gram-positive bacilli, if existing in drainage fluid, were hard to be cultured by general bacteria culture medium. *Bacteroides* species are part of the normal enteric flora¹¹⁻¹³. Once the *Bacteroides* organisms escape the gut, usually resulting from rupture of the gastrointestinal tract or intestinal surgery, they could become significant pathogen, resulting in bacteremia or abscess formation¹¹. When *Bacteroides capillosus* was cultured from drainage fluid, indicating that the infection source might be from guts. The hepatic cyst may have become infected through hematogenous seeding^{6,7}. Epinephrine injection for active duodenal ulcer during gastrointestinal endoscopy was reported to cause infected liver cyst¹⁴. In our case, patient suffered from appetite decrease for 2 months. Obvious weight loss without fever was noted. Chronic hepatic cyst infection with duration for more than one month was considered. Although one upper gastrointestinal endoscopic examination was performed 10 days before admission, this endo-

scopic procedure, including air infusion and biopsies, could not be a possible cause of the hepatic cyst infection.

The esophageal candidiasis found by the upper gastrointestinal endoscopic examination in this case might associate with the chronic hepatic cyst infection. Several systemic factors including low immune function, unreasonable use of antibiotics and hormones, physiological weakness, endocrine disorder, nutritional factors, chemotherapy, radiotherapy, and the presence of malignant diseases may contribute to the occurrence of esophageal candidiasis¹⁵. There were no immune compromised condition, no diabetes mellitus and nor malignant disease in this case. Worse nutritional status due to persisted nausea and poor oral intake might result in the occurrence of the esophageal candidiasis. The amount of oral intake increased after the drainage of infected hepatic cyst. Follow-up panendoscopy after his body weight regained to previous level revealed no esophageal candidiasis.

Bacteroides species are a obligate anaerobe Gram-negative rod. They are part of the normal enteric flora¹¹⁻¹³. Due to their fastidious nature, they are difficult to be isolated from infectious sites. On reviewing of existing case report, we found that *Bacteroides capillosus* associated with infected hepatic cyst has not been reported previously.

In summary, the case highlights an infected hepatic cyst diagnosed by an air-fluid level in abdominal plain films with rare infection pathogen (*Bacteroides capillosus*). Immediate percutaneous transhepatic drainage of the lesion could be the first choice for drainage fluid studies and symptomatic relief.

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由腹部直立式X光照片中 氣-液平面診斷感染性肝囊腫：病例報告

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摘 要

在臨床上，腹部超音波檢查常發現肝囊腫，然而，感染性肝囊腫相對少見，因此，我們今天報告一例68歲男性因為腹部直立式X光照片上腹區域發現氣-液平面而診斷感染性肝囊腫的病人，其症狀於放置穿皮經肝引流管後迅速改善，是第一例多毛擬桿菌感染性肝囊腫報告的個案。希望我們的診斷與治療經驗能提供各位臨床醫師參考。