

—Report on Experiments and Clinical Cases—

Infected Solitary Hepatic Cyst

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Abstract

An unusual case involving an infected hepatic cyst in which the correct diagnosis was made without operation is reported. A 93-year-old woman presented with acute onset of right upper quadrant abdominal pain, mild left lower quadrant abdominal pain, diarrhea, and fever. On admission, computed tomography revealed a 15 cm solitary hepatic cyst in the anterior-superior segment of the liver with a thickened wall that enhanced with contrast media. Ultrasonography demonstrated a 15 cm anechoic lesion with a hypoechoic area in the dependent portion of the cyst and a thickened wall. The serum concentration of C-reactive protein was 24.3 mg/dL, and the white blood cell count was 13,800/ μ L. A diagnosis of infected hepatic cyst was suspected, and percutaneous transhepatic drainage of the cyst was performed. Milky yellow fluid was obtained and the patient's right upper quadrant abdominal pain resolved after drainage. *Klebsiella pneumoniae* was cultured from the drainage fluid. The patient was discharged 20 days after drainage. Infection has not recurred and the hepatic cyst has not enlarged after 18 months. (J Nippon Med Sch 2003; 70: 515–518)

Key words: infection, hepatic cyst, percutaneous transhepatic drainage

Introduction

The majority of benign, nonparasitic hepatic cysts are asymptomatic. However occasionally, complications can occur. Some documented complications include obstructive jaundice¹, rupture^{2–5}, intracystic hemorrhage^{5–9}, and infection¹⁰. This report describes a patient with an infected solitary hepatic cyst in whom the correct diagnosis was made without operation.

Case Report

A 93-year-old woman presented to Uchida Hospital with the acute onset of right upper quadrant abdominal pain, mild left lower quadrant abdominal pain, diarrhea, and fever. Medical history was significant for hypertension managed with medication, and cholecystectomy secondary to cholelithiasis. On admission, computed tomography (CT) demonstrated a solitary hepatic cyst and thickening of the wall of the sigmoid colon. The cyst was in the anterior-superior segment, and its wall was thickened and enhanced with contrast media (**Fig. 1**). Ultrasonogra-

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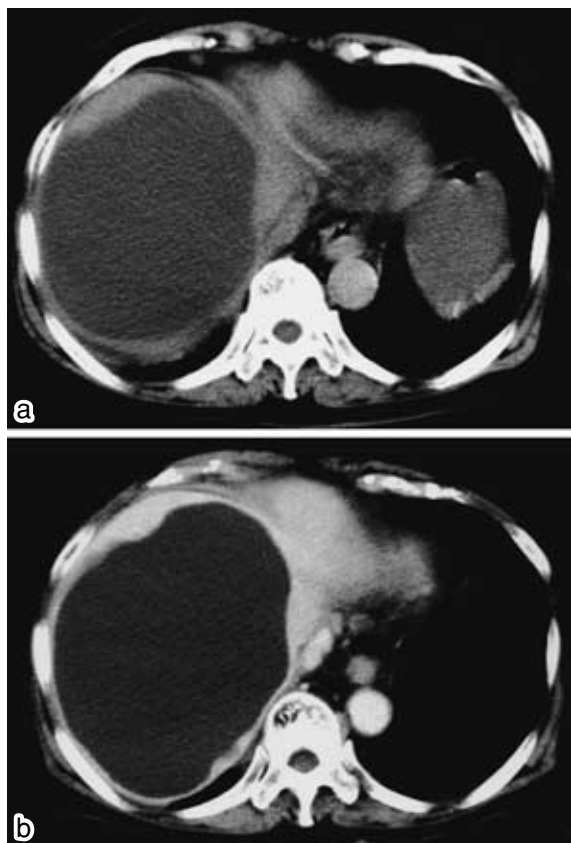


Fig. 1 Computed tomography (CT) on admission reveals a 15 cm hepatic cyst in the anterior-superior segment of the liver (a). The wall of the cyst is thickened and enhances with contrast media (b).

phy demonstrated a 15 cm anechoic lesion with a hypoechoic area in the dependent portion of the cyst with thickening of the wall (Fig. 2). Initial laboratory tests revealed the following: serum glutamic oxaloacetic transaminase concentration, 23 IU/L (normal, <28 IU/L), serum glutamic pyruvic transaminase concentration, 8 IU/L (normal, <33 IU/L), serum alkaline phosphatase concentration, 152 IU/L (normal 66 to 220 IU/L), serum lactic dehydrogenase concentration, 417 IU/L (normal, 180 to 460 IU/L), serum gamma glutamic transpeptidase concentration, 15 IU/L (normal, 8 to 39 IU/L), serum C-reactive protein concentration, 24.3 mg/dL (normal, <0.3 mg/dL), and the white blood cell count, 13,800/ μ L (normal, 4,000 to 8,000/ μ L). The serum concentration of carcinoembryonic antigen was 1.3 ng/mL (normal <2.5 ng/mL) (Table 1). A diagnosis of an infected hepatic cyst was suspected, and percutaneous transhepatic drainage of the cyst was per-



Fig. 2 Ultrasonography demonstrates a 15 cm anechoic lesion with a hypoechoic area in its dependent portion and a thickened wall.

Table 1 Laboratory data on admission

GOT	23 IU/L	WBC	13,800 / μ L
GPT	8 IU/L	RBC	410×10^4 / μ L
ALP	152 IU/L	Hb	10.8 g / μ L
LDH	417 IU/L	Ht	35.0 %
γ GTP	15 IU/L	Plt	36.2×10^4 / μ L
T-bil	0.5 mg/dL	CEA	1.3 ng/mL
BUN	15 mg/dL		
Cr	0.7 mg/dL		
TP	6.1 g/dL		
Alb	3.2 g/dL		
CRP	24.3 mg/dL		

formed. Milky yellow fluid was obtained, and the patient's right upper quadrant abdominal pain resolved after drainage. The diagnosis of an infected hepatic cyst was made and concomitant system antibiotic, flomoxef sodium 2 g per day, was administered. However, diarrhea continued for 10 days after drainage. Cytology of cyst fluid was negative for cancer cells. *Klebsiella pneumoniae* was cultured from the drainage fluid. The drainage catheter was irrigated with saline daily. Cystography did not demonstrate communication between the intrahepatic bile ducts and the cyst. Ten days after drainage, the left lower abdominal pain resolved and barium enema

Table 2 Clinical course

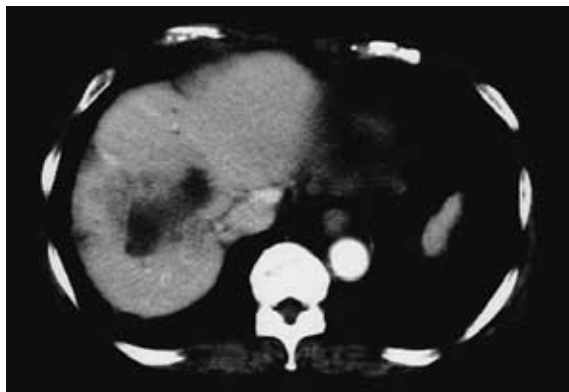
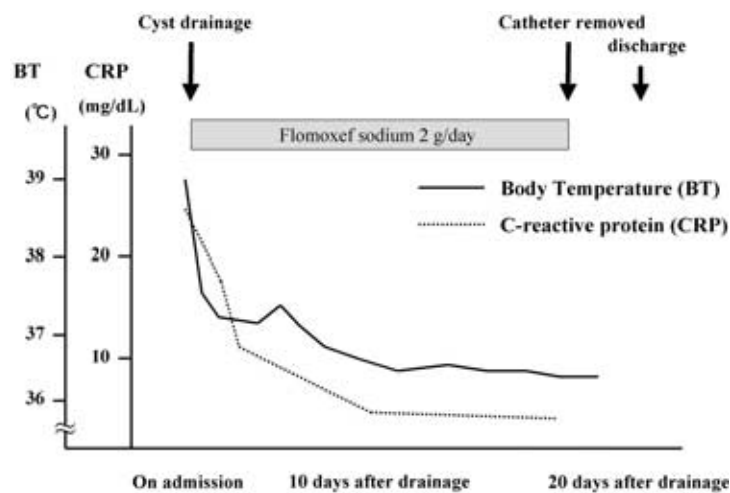


Fig. 3 The drainage catheter was removed 17 days after insertion. Computed tomography showed a thickened cyst wall and a decrease in cyst size.

revealed multiple diverticula of the sigmoid colon. The serum C-reactive protein concentration was 1.5 mg/dL, and the white blood cell count was 5,700/ μ L. The drainage catheter was removed 17 days after insertion. CT showed a thickened cyst wall and a decrease in cyst size (Fig. 3). The patient was discharged 20 days after drainage. Infection has not recurred and the hepatic cyst has not enlarged after 18 months.

Discussion

Most hepatic cysts are asymptomatic. Occasionally they resolve spontaneously, but they also can cause serious complications¹⁻¹¹. Infected hepatic cysts are relatively common in patients with autosomal domi-

nant polycystic kidney disease (ADPKD). Infected hepatic cysts develop in up to 3% of patients with ADPKD who have end-stage renal failure, but in less than 1% of such patients before end-stage renal failure¹²⁻¹⁶. Monomicrobial infections with *Enterobacteriaceae* seem to predominate infection in patients with ADPKD, in contrast to patients with noncystic hepatic abscesses in whom polymicrobial infections are most common¹⁷. In this case, a pure culture of *Klebsiella pneumoniae* was obtained from the drainage fluid. The patient may have had diverticulitis of the sigmoid colon, and the hepatic cyst may have become infected by hematogenous seeding, as described in our previous report¹⁰.

Recurrence of simple hepatic cyst has been reported after only drainage, without injection of a sclerosing agent¹⁸⁻²². It has been suggested that the sclerosing agent kills the secretory cells of the hepatic cyst and that the decrease in size of the cyst indicates reabsorption¹⁸. However, infected hepatic cysts tend not to recur after only drainage, possibly because the infection kills the secretory cells.

Ultrasonography and CT may show abnormal findings that mimic cystic hemorrhage^{7,8}. In this case, CT demonstrated a hepatic cyst with wall thickening that enhanced with contrast media. In infected hepatic cysts, CT usually shows wall thickening, increased heterogeneous density, or gas bubbles within the cyst¹². Ultrasonography demonstrated a 15 cm hypoechoic lesion with a thickened wall. A simple hepatic cyst appears anechoic by ultra-

sonography. Hypoechoic lesions with thickened wall in the liver suggest that the cyst is causing serious complications, such as hemorrhage or infection. Infected hepatic cysts are associated with fever or elevated C-reactive protein concentrations that differentiate them from hemorrhagic hepatic cysts.

In conclusion, we report the case of a patient who suffered an infected solitary hepatic cyst decreased in size after drainage. Percutaneous transhepatic drainage with concomitant system antibiotic administration was a definitive therapy.

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(Received, January 9, 2003)

(Accepted, April 7, 2003)