—Case Reports—

A Case of Spontaneous Rupture of a Simple Hepatic Cyst

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Abstract

We describe the spontaneous rupture of a simple hepatic cyst associated with a benign course. A 64-year-old woman was admitted for right upper quadrant pain. The patient denied a history of abdominal trauma. Abdominal computed tomography (CT) showed a huge solitary hepatic cyst (diameter, 10 cm) in the right lobe. Part of the cyst surface was irregular, and the interior was heterogeneous on ultrasonography. Fluid retention was detected under the liver capsule. Spontaneous rupture of a nonparasitic hepatic cyst was suspected. The patient was admitted to our hospital for further evaluation and treatment. Examination of the abdomen revealed right upper quadrant pain but no signs or symptoms of peritonitis. One week after admission, CT revealed that the volume of fluid retained under the liver capsule had decreased. Percutaneous puncture was performed with a needle and an 8-French pigtail catheter under ultrasonographic guidance. Serous, brown fluid was aspirated. After percutaneous aspiration, the patient's symptoms resolved. Minocycline hydrochloride was given daily by intravenous injection for 7 days. The catheter was then removed. There has been no evidence of recurrence after 1 year.
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Key words: hepatic cyst, rupture, nonparasitic cyst

Introduction

Nonparasitic cystic disease of the liver occurs in 5% to 10% of the population. The incidence sharply rises with age. The pathogenesis is related to the type of cyst. Simple cysts may be solitary or multiple and are lined by cuboidal epithelium. Such cysts are attributed to the abnormal in utero development of intrahepatic bile ducts[1]. Cyst rupture into the peritoneal or pleural cavities may be caused by trauma, although spontaneous rupture has also been reported[2–8]. Rupture of a nonparasitic cyst is an unusual event that requires emergency surgery[4]. We describe the spontaneous rupture of a simple hepatic cyst with a benign course.

Case Report

A 64-year-old woman was admitted for right upper quadrant pain. The patient denied a history of abdominal trauma. There was no family history of renal failure or cystic disease of the liver or kidneys. A computed tomographic (CT) scan of the abdomen showed a large solitary hepatic cyst (diameter, 10 cm) in the right lobe. Part of the cyst surface was

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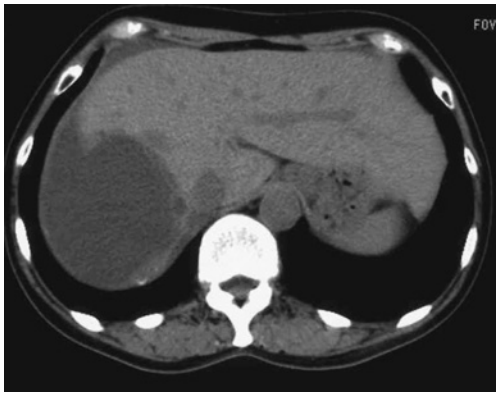

Fig. 1 An abdominal computed tomographic scan, showing a huge solitary hepatic cyst (diameter, 10 cm) in the right lobe. The cyst surface was irregular, and interior was heterogeneous on ultrasonography. Fluid retention was detected under the liver capsule.

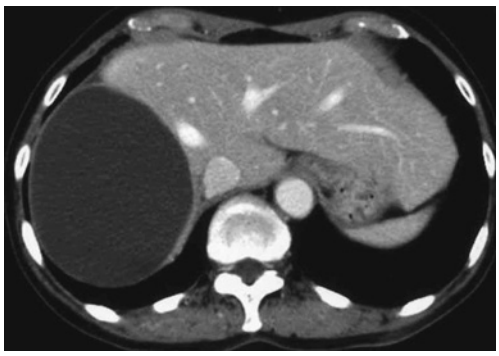

Fig. 2 One week after admission, computed tomography revealed that the volume of fluid retained under the liver capsule had decreased.

irregular, and the interior was heterogeneous on ultrasonography. Fluid retention was detected under the liver capsule **(Fig. 1)**. Spontaneous rupture of a nonparasitic hepatic cyst was suspected. The patient was admitted to our hospital for further evaluation and treatment. Physical examination on admission showed no jaundice, spider angioma, or palmar erythema. There were no abnormalities of the chest or heart. Examination of the abdomen revealed right upper quadrant pain but no signs or symptoms of peritonitis. One week after admission, CT revealed that the volume of fluid retained under the liver capsule had decreased **(Fig. 2)**. Percutaneous puncture was performed with the use of a needle and an 8-French pigtail catheter (Ultrasonic Guided

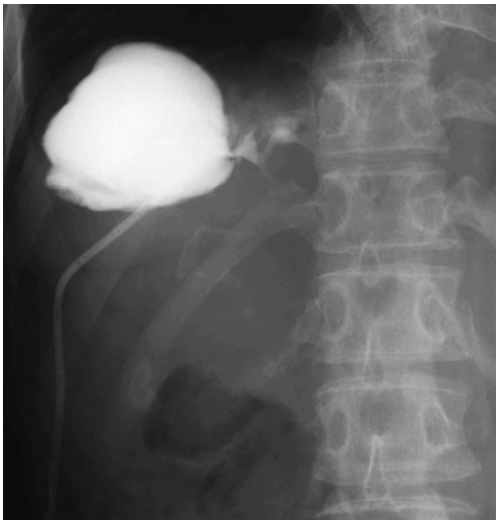

Fig. 3 After the removal of approximately 50 mL of fluid, contrast medium was injected to check for communications between the cyst and the biliary tree and to confirm the absence of leakage into the peritoneal cavity.

One-step Drainage Set type S, Hakko Shoji, Co., Ltd., Tokyo, Japan) under ultrasonographic guidance. Serous, brown fluid was aspirated. After the removal of approximately 50 mL of fluid, contrast medium was injected to check for communications between the cyst and the biliary tree and to document the absence of leakage into the peritoneal cavity **(Fig. 3)**. After complete aspiration of the cyst fluid, 200 mg of minocycline hydrochloride dissolved in 10 mL of saline was injected into the cyst, and the catheter was flushed with 10 mL of saline (total volume of saline, 20 mL). The catheter was then clamped for 30 minutes, as we have recommended previously[9]. After percutaneous aspiration, the patient's symptoms resolved. Minocycline hydrochloride was injected daily for 7 days, and the catheter was removed. There has been no evidence of recurrence after 1 year.

Discussion

Simple nonparasitic hepatic cysts are thought to be congenital. During embryogenesis, aberrant or excessive numbers of intrahepatic bile ducts develop and consequently dilate to form hepatic cysts. Adult polycystic liver disease is a genetic disease that is usually associated with polycystic kidney disease, in

which the entire liver is occupied by cysts[10]. Simple hepatic cysts are common benign lesions that are usually asymptomatic and require no treatment. Cyst rupture into the peritoneal or pleural cavity may be caused by trauma, although spontaneous rupture occasionally occurs[2–8]. Other complications, such as obstructive jaundice [11], intracystic hemorrhage[6,12–16], and infection[17–24], develop in 5% of patients. The two most common complications of nonparasitic hepatic cysts are intracystic hemorrhage and infection, often leading to pain. Symptoms are usually caused by space occupation by the cysts and pressure exerted by adjacent structures. The severity of symptoms depends on the size, number, and location of cysts. Patients frequently complain of chronic abdominal pain (right upper quadrant or epigastric), abdominal fullness, early satiety, dyspnea, increased abdominal girth, or vomiting. Spontaneous rupture of hepatocellular carcinoma has occurred occasionally [25,26], but spontaneous rupture appears to be a rare complication of nonparasitic hepatic cysts[27–36]. Cyst rupture causes diffuse abdominal pain, as well as clinically significant intra-abdominal hemorrhage in some patients.

In the management algorithm for patients with cystic disease, clinicians must be certain of the diagnosis and carefully determine if and when surgery is indicated. Symptoms are usually nonspecific, and the diagnosis is one of exclusion, i.e., ruling out other possible conditions[1]. Treatment is indicated if cysts are symptomatic, if complications occur, or if neoplastic growth is suspected[3,37,38]. Because our patient had no signs or symptoms of peritonitis, clinical observation and conservative treatment were the procedures of choice. Because the hepatic cyst had ruptured into the liver capsule, the fluid did not enter the peritoneal cavity.

The technique of open cyst deroofing or fenestration was first described by Lin et al in 1968[39]. This procedure has been recommended by several groups and been used successfully to treat simple hepatic cysts. It is particularly useful in patients with only one or several large cysts in whom the mass effect of such cysts can be significantly reduced[40]. More radical approaches, such as hepatic resection, have been advocated for the treatment of extremely large cysts. Hepatic resection has been shown to be a safe and effective procedure that provides complete and permanent symptomatic relief in the absence of diffuse polycystic disease of the liver[40]. Current surgical management relies on fenestration or deroofing of the cyst, with or without placement of an omental flap into the residual cavity to prevent the edges from co-apting. Recently, a laparoscopic approach to this technique has been shown to be practical and safe. Compared with laparotomy, minimally invasive surgery is associated with less postoperative pain and disability, a shorter hospital stay, and superior cosmetic results[41].

Recent trends in the management of symptomatic hepatic cysts have shifted to minimally invasive procedures, such as percutaneous treatment and laparoscopic deroofing of the cyst wall[42]. Previous studies have used alcohol as a sclerosing agent, but the usage conditions have varied considerably, such as the exposure time to ethanol, the concentration and volume of ethanol, and the number of sclerotherapy sessions [9,42,43]. Percutaneous cyst aspiration or drainage without sclerotherapy is considered ineffective and carries a high risk of recurrence because secretions from the epithelial cell lining of hepatic cysts inhibit cyst obliteration. The use of sclerosing agents has been recommended to promote coagulation-induced necrosis of the cyst epithelium and to definitively obliterate cysts[44]. Various sclerosing agents have been injected into hepatic cysts. Ethanol has been used, but can cause pain, fever, and intoxication. More recently, minocycline hydrochloride has been successfully used to treat hepatic cysts[9,43]. The strong acidity of minocycline hydrochloride has been suggested to kill the secretory cells of hepatic cysts, which are then resorbed and shrink[9,43].

There is no standard strategy for the management of hepatic cyst rupture. Emergency laparotomy should be performed in patients with signs and symptoms of acute abdomen or abdominal bleeding. In some patients with no evidence of peritonitis, clinical observation and conservative treatment may be the option of choice[4].

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