Hydatid Cyst of Liver: a case report

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A 28-year-old lama, who came from Nepal, presented with intermittent abdominal pain for 2 years. Abdominal sonography, CT and MRI showed a multiloculated cystic mass in the caudate lobe of liver with some punctate calcifications at the peripheral wall and thickened septa. Under the impression of hepatic hydatid cyst, the patient received left lobectomy and cholecystectomy. Histological study of the lesion showed a cyst with many daughter cysts lying free in the cyst fluid. Hydatid cyst is uncommon in Taiwan and has been found only in immigrants or persons with a history of travel to endemic areas. It may be asymptomatic or may lead to lethal complications. Surgery is considered the optimal treatment that has the potential to remove the cyst and leads to complete cure. It is important to make a preoperative diagnosis based on the typical image findings, so that surgeons may take particular precaution not to rupture the lesion as peritoneal spillage may lead to disseminated implantation.

Key words: Echinococcus granulosus, Hydatid cyst, Liver

Hydatid cyst disease caused by Echinococcus granulosus has a worldwide distribution. It may be asymptomatic or may lead to lethal complications. It is uncommon in Taiwan and has been seen only in immigrants or persons with a history of travel to endemic areas. Only 3 cases of hepatic hydatid cyst in Taiwan had been reported [1-3]. Two of them were Echinococcus granulosus infection, but no MR imagings were presented. We report a case who is a lama from Nepel and complain of chronic abdominal pain. The abdominal sonography, CT and MRI showed typical appearance of hepatic hydatid cyst. Microscopic examination confirmed Echinococcus granulosus infection.

CASE REPORT

A 28-year-old man presented with intermittent right upper abdominal pain for two years. He is a lama who had lived in Nepal, Tibet and India. A huge, multiloculated, cystic lesion in the caudate lobe of liver was detected by sonography and computed tomography in a local hospital. According to the clinical history and the image findings, a hydatid cyst was suspected. The patient was admitted to our surgery department for further treatment.

Physical examination were generally normal. The data of routine CBC and serum biochemistry profile were unremarkable. The serologic tests, including the hydatid immunoelectrophoresis, enzyme-linked immunosorbent assay (ELISA), latex agglutination and indirect haemagglutination (IHA) test, were not performed during administration. His stool was soft and brown, and no parasite was found. Abdominal sonography showed a complex cystic lesion with solid component in caudate lobe of liver(Fig. 1). Some mobile echogenic foci within the cyst were noticed during posture change of the patient. Abdominal CT was performed by an 8-slice scanner (LightSpeed Plus, General Electric, WI, USA) with the following parameters: collimation, 2.5 mm; table speed, 15 mm per rotation; and rotation, 0.8 second. Images were reconstructed at 5.0 mm section thickness with 5.0-mm
intervals. It showed cysts-in-cyst appearance in the caudate lobe with some punctate calcifications at the peripheral wall and thickened septa (Fig 2). The IVC was compressed by the mass. There was no evidence of abnormal enhancement during the dynamic scanning and no enlarged lymph node at the porta hepatitis and para-aortic regions. Abdominal MRI was performed by a 1.5-tesla MR scanner (Signa Excite, GE Medical System, Milwaukee, WI). The cystic mass with hypointensity rim and the small cysts within it were clearly demonstrated (Fig. 3). Celiac and superior mesenteric angiography were performed to evaluate the relationship between major vessels and the lesion. It showed a huge perfusion defect in caudate lobe of the liver and patency of the portal and hepatic veins (not shown).

The patient received left lobectomy and cholecystectomy. The surgical finding was a huge hydatid cyst at the lateral and caudate lobe area of liver. There was no intraoperative spillage of its contents. Histological study of the lesion showed a cyst with many daughter cysts lying free in the cyst fluid (Fig. 4). Microscopically, the cyst lined by laminated fibrous wall with granulomatous inflammation. There were many tapeworms in daughter cysts. Hydatid cyst caused by Echinococcus granulosus infection was diagnosed.

Figure 1. Abdominal sonography showed a polycystic lesion (arrows) with solid components (arrowheads) in the caudate lobe.

Figure 2. Contrast-enhanced abdominal CT reveals a multiloculated cystic mass in the caudate lobe. There is punctate calcification at the peripheral wall (arrowhead). The wall and septa of the cyst were not enhanced (arrows).

Figure 3. a. Axial T2-weighted fast spin-echo (FSE) image (TR/TE = 205/96/98) showed the cystic mass with hypointensity rim (arrows) and daughter cysts (arrowheads) within it clearly. b. Axial T1-weighted fast spoiled gradient echo (FSPGR) sequence (TR/TE = 175/1.6) after Gd-DTPA demonstrates showed no obvious enhancement of the septa and cystic wall (arrows).
The patient was discharged 2 weeks after the operation and was clinically normal after suture removal. He took mebendazole for further prevention.

**DISCUSSION**

Hydatid cyst is a zoonotic disease that occurs throughout the world, particularly in sheep- and cattle-raising areas such as Turkey, other Mediterranean countries, the Middle East, South America, New Zealand and Australia [4]. There are two types of Echinococcus infections, Echinococcus granulosus (E. granulosus) and Echinococcus multilocularis (E. multilocularis). In humans, hydatid cyst is mostly caused by the larvae of a flat tapeworm, E.granulosus [5]. E.multilocularis is less common but more invasive, mimicking a malignancy [6]. In Taiwan, hydatid cyst is uncommon and is seen only in immigrants or persons with a history of travel to endemic areas [1-3].

The life cycle of E. granulosus alternates between herbivores and carnivores, such as sheep and dogs. Man is an accidental intermediate host and an end point in the parasite’s life cycle. The liberated ova burrow through the intestinal mucosa and are carried by the portal vein to the liver, where they develop into adult cysts. The liver is the most common site of hydatid disease and most cysts are located in the right lobe [6]. Some ova pass through the capillary sieve and become lodged in any part of the body. The bloodstream reaches, including the lung, peritoneum, kidney, brain, mediastinum, heart, bone, soft tissues, spinal cord, spleen, pleura, adrenal glands, bladder, ovary, scrotum, and thyroid gland [7, 8].

Hydatid cysts may be asymptomatic for many years. Its presence may become evident when the hepatomegaly is found or a cystic lesion in noted when the liver is imaged for other reasons. Sometimes a dull ache in the RUQ or a feeling of abdominal distension is complained. It may be painful or lead to complications such as rupture into the biliary tract, or rupture into the peritoneal cavity, and the patient may experience cholangitis or anaphylactic shock [9].

Hydatid cysts can be solitary or multiple. Imaging findings depend on the stage of cyst growth. The results of most laboratory screening examinations are usually normal. The diagnosis can be confirmed when imaging is combined with serological tests. But serological test was not available in our case. Calcification is usually curvilinear or ringlike and involves the pericyst. It is seen on radiography in 20%-30% cases of hepatic hydatid cysts. The presence of multiple echogenic foci that fall into the dependent portion of the cyst during posture change of the patient is a characteristic ultrasound finding as “snowstorm sign”. On CT and MR imaging, the septa and cyst wall frequently enhance after injection of contrast material frequently. A low-signal-intensity rim (“rim sign”), that is more evident on T2-weighted images, has been described as characteristic of hydatid cysts as opposed to nonparasitic cysts in the liver and lungs [3]. In a few equivocal cases with negative serological tests, an image-guided aspiration of the cyst content for microscopic analysis can help to establish a definitive diagnosis prior to therapy [10]. However, spillage of contents should be avoided during the procedure.

As in our case, abdominal sonography showed daughter cysts separated by solid component, which should be hydatid matrix containing broken cysts, scolices, and hydatid sand. The appearance of hydatid matrix in CT is variable, depending on the content that fills the cyst completely or incompletely [6]. CT and MRI demonstrate the cystic mass and the small cysts within it, so-called “cysts-in-cyst” appearance. The “rim sign” on T2-weighted images is compatible with the fibrotic wall of surgical specimen of the hydatid cyst. Enhancement of the cystic wall depends on the inflammatory process and vascularity. Although there is no obvious wall enhancement in our case, which is probably due to less response of the host to the parasite, the differential diagnosis can be made when there is history of living in endemic regions along with these imaging findings.

Patients with hydatid cysts frequently present a therapeutic challenge. Medical treatment of hydatid
cysts with mebendazole or albendazole has been reported, but the results of medical therapy alone remain controversial [11]. It has been used in the prevention of postoperative local recurrence and sterilization before surgery [12]. Percutaneous drainage had been proposed as an alternative to surgery, especially in patients who cannot or who do not want to undergo operation [13]. Surgery is considered the optimal treatment that has the potential to remove the cyst and leads to complete cure [14]. The main principle of surgical treatment is to eradicate the parasite, prevent intraoperative spillage of contents and obliterate the residual cavity. Recurrence of hydatid cyst may occur either from spillage of hydatid fluid during the operation or from further reinfection of the patient [15].

Hydatid cyst of the liver due to Echinococcus granulosus infection remains a challenging clinical problem. However, it should be kept in mind when a cystic lesion is encountered anywhere in the body. Familiarity with imaging features, especially in patients living in countries where this disease is endemic, provides important advantages in making the diagnosis.

**REFERENCES**

肝臟包蟲囊病：病例報告

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一個來自尼泊爾的28歲喇嘛感到間歇性的腹痛已有兩年。腹部超音波，電腦斷層及磁共振影像顯示在肝臟尾葉有一個多囊性的腫塊，合併有囊壁及內隔的增厚及鈣化。初步診斷為肝臟包蟲囊病後，病人接受了肝左葉切除及膽囊切除。組織學檢查可見許多子囊飄浮在大的囊腫內。包蟲囊病在台灣並不常見，大多只發生在移民和去過疫區旅行的人身上。病人可能沒有症狀，但也可能有致命的併發症。手術治療被認為是有機會完全治癒的方法。依據典型的影像表現作術前的診斷是很重要的，外科醫師可以特別注意不要因病灶破裂造成腹內感染。

關鍵詞：犬包生條蟲；包蟲囊病；肝臟