Case Report

Rare CT and MR image findings of hepatic cystic echinococcosis: Two cases report

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Abstract

Hepatic cystic echinococcosis is a zoonotic parasitic disease. Generally this disease have typical CT and MR imaging features and easy to make a definite diagnosis. In this report, we present two cases of hepatic cystic echinococcosis with uncommon CT and MR imaging findings.

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Keywords: Cystic echinococcosis; Hepatic; Computed tomography; Magnetic resonance imaging

1. Introduction

Hepatic cystic echinococcosis (HCE) is a zoonotic parasitic disease caused by larvae of echinococcus granulosus. This infectious disease is global distribution and endemic among pastoral areas in high altitude and cold and dry climate. Echinococcosis usually conceals onset and has no specific clinical feature, then the diagnosis is based on imaging examination. Generally CT and MR examination can give a confirmed diagnosis in HCE for its characteristic imaging findings. But there still have some cases with atypical imaging performance that make them difficult to determine the diagnosis or even be misdiagnosed. We have met two cases in the routine work flow which were suspected as neoplastic lesions in imaging exam. All the cases were confirmed HAE diagnosis by surgery in the first affiliated hospital of Xinjiang medical university. Here, we present the two cases with their atypical CT and MRI findings.

2. Case report

2.1. Patient 1

A 43-year old woman with abdominal distension and peritoneal cavity mass was admitted in January 2008 for further treatment. The patient lived in endemic regions and was engaged in livestock raisin. CT showed a huge cystic-solid mass localized in hepato-renal space and complicated with right hepatic lobe atrophy (Fig 1). To measurement the largest slice on CT axial images, the area was 11.8 cm × 13.6 cm. This "tumor" had a clear boundary and an intact capsule. The lesion was heterogeneous, the majority areas inner the lesion showed water-like density, but inferior pole of the mass presented irregular soft density. There had no calcification and daughter cyst sign can be detected on CT images. No enhancement was found in this lesion. After the imaging examination, the patient underwent surgical treatment and was comforted HCE originated from right lobe of the liver, an excision of internal capsule were performed. The cyst fluid was pale yellow and there were multiple daughter vesicles in this lesion. It was a little pity that the

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histopathological examination was not carried on for its typical daughter cyst structure.

2.2. Patient 2

A 37-year old man without clinical symptoms and ultrasonic examination revealed a solid lesion in the gastrohepatic ligament, and then patient was admitted in November 2018 for further diagnosis. This patient had a cholecystectomy history but had no personal history for lives and works in epidemic areas. An abdominal multiphase contrast enhanced CT was made during his admission (Fig 2). The CT scan showed a circular soft tissue density mass in the hapatogastric ligament, the size was about 4.56 cm \times 3.67 cm, with smooth borders and heterogeneous density. Some eggshell calcification could be detected on CT plain scan and some lymph nodes could be seen around the lesion. No enhancement was found in all tumors on multiphase enhanced CT. It was an echinococcosis or a hematoma or a benign tumor? The diagnosis still could not be confirmed after CT scan. So a MRI enhancement examination was acquired (Fig 3). There were heterogeneous hypointense in T1WI and heterogeneous hyperintense in T2WI. The edge of the lesion was surrounded with an annular low signal. Part of the slice showed that the liver caudate lobe had no a clear border with the mass, especially in oblique sagittal MRI scanning, the fat line between the lesion and the pancreas was clear. There was no remarkable changes on gadolinium enhanced scans. Finally, the patient underwent surgical treatment. The lesion was completed removed and was confirmed originated in the caudate lobe. There was extensive calcification with the mass and the pathology result confirmed the cystic echinococcosis diagnosis.

3. Discussion

Human infected cystic echinococcosis mainly through the digestive tract, the larvae of echinococcus granulosus (onchosphere) invade the intestinal wall and enter the portal vein system [1], then liver becomes the first filter organ and
may be development of an echinococcosis lesion when the onchosphere has not been destroyed. According to the standardized classification made by WHO/IWGE group [2], HCE was divided into five types (CE1-5), the first affiliated hospital of Xinjiang medical university adopts this classification after the operation and the two cases were confirmed to CE2 and CE5 respectively. The traditional imaging modality is ultrasonography; however with the development and popularization of modern medical equipment, CT and MRI exam are increasingly used in echinococcosis disease.

HCE have characteristic imaging features on CT and MR scan [3,4]. CT usually shows a uniform water-like density lesion with well-defined border and a distinguishable wall. Eggshell/line-like calcification of the wall and daughter cyst sign are the specific CT findings. CT is valuable to study extrahepatic diffusion because it allows imaging of the entire abdomen, pelvis or even thorax [5]. MR imaging clearly demonstrates the pericyst as hypointense on T1WI and T2WI. The daughter cysts appear hyperintense on T2WI. But the two cases that reported in this paper have unusual imaging findings.

First, the locations of the two cases are confusable. Patient 1 manifests a cystic-solid lesion and the most part of the "tumor" is located in the intraperitoneal of right upper abdomen. Although the lesion occupied the majority part of right hepatic lobe, there is still difficult to determine the origin site because of the huge size. The lesion of patient 2 completely located in the hepatogastric ligament. Although this solid mass is connected with the hepatic caudate lobe, we more likely to had mistaken the lesion as a protruding liver neoplasm than an echinococcosis. HCE can exophytic growth out of the liver contour, literature [6] reported that the two most common routes of exophytic growth are the bare area of the liver and the gastrohepatic ligament.

Second, the image features of the two cases are atypical. Patient 1 manifests a cystic-solid lesions and the most part of the "tumor" is located in the intraperitoneal of right upper abdomen. Although the lesion occupied the majority part of right hepatic lobe, there is still difficult to determine the origin site because of the huge size. The lesion of patient 2 completely located in the hepatogastric ligament. Although this solid mass is connected with the hepatic caudate lobe, we more likely to had mistaken the lesion as a protruding liver neoplasm than an echinococcosis. HCE can exophytic growth out of the liver contour, literature [6] reported that the two most common routes of exophytic growth are the bare area of the liver and the gastrohepatic ligament.

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Identify daughter cyst in CT examination. Unfortunately, CT scan failed to distinguish any daughter cyst structure in this case. Despite of a clear boundary, an intact capsule and water-like density in majority area of this lesion, the diagnosis is still uncertain because of the irregular soft density in the inferior pole. Patient 2 was classified to degeneration cyst (CE5) after operation and the pathological results confirmed the diagnosis of HCE. Calcification of the cyst wall is a regular feature in CE5 [7], but no calcification was showed in this wall. In a summary, cystic echinococcosis primarily parasitic in the liver and usually have typically imaging findings. However, there are still some uncommon imaging performances that will confuse the correct diagnosis. Generally, this uncommon case still have some imaging clues, catch these clues and remember the unusual imaging findings will contribute to make the correct diagnosis.

Author contributions

Jian Wang, Wen-ya Liu designed and performed the research; Jian Wang collected the image data and followed up the clinical data; Jian Wang wrote the paper.

References


Fig. 3. MR image. T1WI axial view (A), T2 fat-suppress sequence (B), T1 contrast enhanced sequence (C), T2 oblique sagittal view (D).