CASE REPORT

Unusual Radiological Findings of Fasciola Hepatica Infection with Huge Cystic and Multilocular Lesions

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Abstract

This report describes a case of hepatic phase Fasciola hepatica infection presenting huge and multilocular lesions. The unique radiological findings mimicked hydatid diseases and also cystic liver neoplasm. Fascioliasis should be included in the differential diagnosis for cystic liver diseases.

Key words: fasciola hepatica, fascioliasis, eosinophilia, cystic, abscess, dot-ELISA

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Introduction

Fascioliasis is a widespread infectious disease caused by trematode Fasciola hepatica (F. hepatica) infection (1). Although the radiological diagnosis of human fascioliasis has been improved, consideration of the possibility in the differential diagnosis is lacking in many developed countries. Typical computed tomography (CT) findings for hepatic phase of fascioliasis include small or sometimes clustered hypodense nodules and tortuous linear tracks, which are predominantly in subcapsular area (2, 3).

Here, we report a case with a unique hepatic phase fascioliasis. The patient was free from the symptoms, but presented uncommon radiological findings; a huge cystic lesion located in the middle of the liver together with peripheral multiloculated lesions.

Case Report

A 61-year-old Japanese man was referred to our hospital for the evaluation of migrating hepatic masses in November 2005. He had been involved in the construction of a power plant in Myanmar from January to November 2004. He had had a health checkup at a pre-consulted hospital in January 2005, and had undergone blood tests and abdominal ultrasonography (US) imaging. Although the clinical and laboratory findings were unremarkable except for peripheral blood eosinophilia (3,200/ml), the abdominal US imaging demonstrated multiple hypo-echoic lesions in right hepatic lobe. A contrast-enhanced CT scan showed multiple hypodense lesions in the right hepatic lobe. In the anterior segment of the right lobe, a huge and low attenuated mass measuring up to 57 mm with regular margins and some tiny hypodense lesions were detected (Fig. 1a, b). Thickening of the common bile duct or biliary dilatation did not exist. Although histological examination of the liver biopsy demonstrated the differentiation from neoplastic lesions including intrahepatic cholangiocarcinoma or bile duct cystadenocarcinoma, the specimens were consistent with inflammation characterized by the presence of fibrotic changes and no sludge was drained. He was followed without any treatment and was referred to our hospital in November 2005.

On admission, physical examinations revealed only slight...
hepatomegaly. Laboratory data showed the white blood cell count of 7,030/ml with a differential of 14.8% eosinophils. Serum IgE level was 438 U/ml (normal range; <250 U/ml). Neither ova nor larvae of any parasites were found in his stool. Contrast enhanced CT scans in November 2005, demonstrated mainly two types of masses in the right hepatic lobe. One of the masses, which had been detected in January but migrated during ten months, was located in the anterior segment and showed cyst-like hypodense lesion measuring up to 45 mm (Fig. 1c). The other mass, which could not be detected in January 2005, was located in the posterior segment and multiloculated (Fig. 1d). Because it was ineffective to distinguish between solid and cystic materials constructing these hypodense lesions with CT and ultrasonographic examinations, magnetic resonance imaging (MRI) was performed. The corresponding lesions proved to be hypointense on T1-weighted images (Fig. 2a), hyperintense on T2-weighted images (Fig. 2b, c), and extremely hypointensive foci on inverted diffusion-weighted images (Fig. 2d). These MR images suggested that these hepatic lesions consisted of necrotic or abscess-forming materials. MR cholangiopancreatography showed normal presentation.

The diagnosis was made by serologic tests. Because of the presence of eosinophilia and radiological changes of those lesions, we suspected that he suffered from some type of parasitic infection. We conducted a screening test for parasitic antibodies in the patient’s serum using a multiple dot enzyme-linked immunosorbent assay (dot-ELISA) (4). The antibody against *F. hepatica* was strongly positive by dot-ELISA. We also performed plate-ELISA and the ouchterlony double-diffusion test for confirmation. The ELISA titer for the antibody to *F. hepatica* was highly increased and the ouchterlony test showed a strong precipitin band against crude antigen of *F. hepatica* (Fig. 3). The antibody to *Echinococcus multiocularis* was negative in plate-ELISA. The patient was treated with triclabendazole (5). After 6 weeks, abdominal CT revealed a significant decrease in the size of the huge cystic lesion as well as the satellite lesions.

**Discussion**

*F. hepatica* is a trematode parasite that naturally infects cattle or sheep, and causes fascioliasis in almost every country around the world (1). Humans are an accidental reservoir host and could be infected by the ingestion of metacercaria-laden water plants. The infected young fluke, hatched from metacercaria, migrates in the peritoneal cavity and penetrates through the liver to the bile ducts causing acute hepatic phase of fascioliasis. In the later stage, the fluke matures and lodges in the bile duct resulting in chronic biliary disorder. In the acute hepatic phase, most patients note right upper quadrant pain, fever and malaise with eosinophilia, but a few cases remain asymptomatic like the case presented here (6). Although the diagnosis of fascioliasis is fundamentally made by the detection of the ova or fluke in the bile duct or stool, it is difficult to obtain such evidence until the patient advances to the chronic biliary phase.
Typical CT findings for hepatic fascioliasis are nodular or tubular hypodense lesions up to 20-30 mm in diameter particularly in the subcapsular area (2, 7) because the infected form of metacercariae penetrates through the liver capsule and could cause subcapsular hemorrhage and frank hepatic necrosis before the biliary stage (8). However, some atypical radiographic findings have also been observed during acute or chronic fascioliasis (9, 10). In the present case, a huge abscess-forming lesion and asymptomatic physical presentations with eosinophilia mimicked hepatic unilocular hydatid disease (11) but that etiology is unknown. Usually, unilocular hydatid disease is caused by *Echinococcus granulosus* infection that produces unilocular and huge cystic lesions without any obvious symptoms. Although *Fasciola* and *Echinococcus* are quite different parasites, these parasitic diseases may present similar radiological appearances. Kim and colleagues reported confusing radiological findings of fascioliasis exhibiting huge abscess lesions without eosinophilia (9). That lesion was considered as an abscess-forming lesion with distinct thick wall and therefore as chronic biliary phase fascioliasis. These radiological and laboratory findings were not exhibited in the present case of hepatic phase fascioliasis; therefore our case was different from those in previous reports.

In the past decade, substantial progress in the radiological diagnosis of human fascioliasis has been achieved and some reports on the MR imaging have been well documented (12, 13). Cevikol and colleagues (12) reviewed the MR observations of hepatic fascioliasis and classified them into five types. In their article, hypointense lesions on T1-weighted images and brightly hyperintense lesions on T2-weighted images could be classified as one of the type of lesion. However, the appearance of the lesions in our case, i.e., huge and multiloculated masses, was not referred to as a usual pattern of hepatic fascioliasis. Intrahepatic cholangiocarcinoma or biliary cystadenocarcinoma could demonstrate the same signal patterns on T1-weighted and T2-weighted images, but the diffusion-weighted image is quite useful to distinguish solid neoplasms and necrotic cysts caused by fascioliasis as in the present case (14). Bacterial abscess also shows similar MR images, therefore, it is not possible to confirm the diagnosis based on MR images and thus examinations of other laboratory findings, serology and aspiration/
specimens are necessary. In conclusion, we emphasize here that hepatic fascioliasis can present a variety of lesions in the liver and huge cystic liver masses can also be produced. It is important to keep these findings in mind.

References


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