

Colloid liver SPECT of hepatic alveolar echinococcosis

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Seventy-one-year-old man had a liver mass. He lived in Hokkaido, where there is an epidemic of hydatid disease. Abdominal US image showed an echogenic mass. CT revealed a low density mass with an unclear margin. A ^{99m}Tc -Sulfur colloid liver SPECT study was performed to detect the liver mass. The SPECT scan was done after intravenous administration of 5 mCi of ^{99m}Tc -sulfur colloid, and it revealed a lack of uptake in the liver mass. The liver SPECT findings were correlated with subsequent CT and US imaging. Echo-guided biopsy showed a PAS-positive cuticle layer of echinococcosis in the necrotic tissue. This is the first report of a case of detection of hepatic alveolar echinococcosis by means of a colloid liver SPECT imaging procedure.

Key words: colloid liver SPECT, hepatic alveolar echinococcosis

INTRODUCTION

ECHINOCOCCAL disease of the liver is caused by the larvae of a small tapeworm. The disease occurs in two distinct forms, cystic hydatid (echinococcosis granulosus) and alveolar hydatid (echinococcosis multilocularis). The alveolar hydatid differs from the cystic hydatid in several respects.¹ The disease process of the alveolar hydatid tends to become diffuse and infiltrative, resembling a malignancy both clinically and radiologically.^{2,3} This lesion was difficult to distinguish radiologically from neoplasms. It is emphasized that proper history taking and awareness of this disease will decrease the chance of misdiagnosis.⁴ We encountered a patient with the alveolar form of echinococcal liver disease which resembled a solid liver tumor.

CASE REPORT

A 71-year-old man with epigastralgia was admitted to the hospital. He lived in Hokkaido. His epigastralgia

was found to be due to kissing ulcers of the stomach. However, an echogenic mass was incidentally discovered in the liver on abdominal ultrasonography.

The physical examination showed no hepatosplenomegaly or jaundice. No abnormal findings were noted in routine laboratory tests.

Abdominal US study revealed an echogenic mass in the right lobe (S 7) of the liver. The boundary of the mass was irregular and the internal echo was inhomogeneous. There was a halo-like sono-lucent zone and attenuation of echoes posterior to the mass (Fig. 1). Following the administration of 5 mCi of ^{99m}Tc -sulfur colloid, liver scintigraphy showed a photopenic defect in the mass (Fig. 2a). Transverse reconstruction of SPECT images obtained at 30 minutes after intravenous administration showed the absence of uptake in the right lobe of the liver (Fig. 2b). Plain CT scan revealed a low density mass with an unclear margin in the right lobe (S 7) of the liver, that showed inhomogeneous soft-tissue density (Fig. 3a). Contrast enhanced CT showed no significant enhancement (Fig. 3b). Angiography of the liver was performed to determine malignancy. There were no abnormal findings such as tumor stain, tumor vessels, irregularity of intra-hepatic vessels, or pooling.

Finally echoguided tumor biopsy was done to determine the type of disease. It showed a PAS-

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Fig. 1 Abdominal US revealed an echogenic mass in the right lobe (S 7) of the liver (arrow).

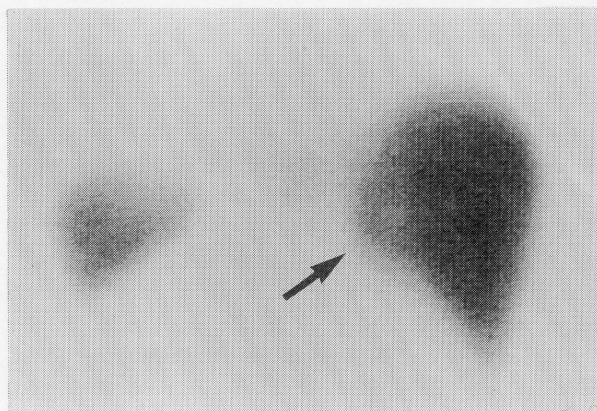


Fig. 2a Posterior view of plain colloid liver scintigraphy showed a photopenic defect in the mass (arrow).

positive cuticle layer of echinococcus in the necrotic tissue. Extended segmentectomy was performed.

DISCUSSION

Echinococcal disease may resemble a variety of liver mass, namely, a simple cyst, abscess, metastasis, chronic hematoma and biliary cystadenoma/cystadenocarcinoma. A careful history may provide clues to the most likely etiology for an intrahepatic mass lesion. Obtaining a history of travel to or living

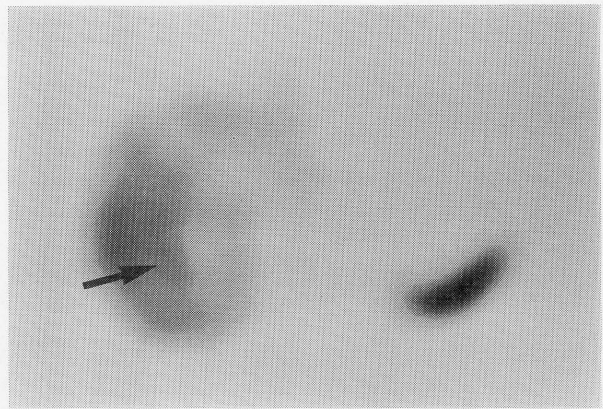


Fig. 2b Transverse reconstruction of SPECT images showed the absence of uptake in the right lobe of the liver (arrow).

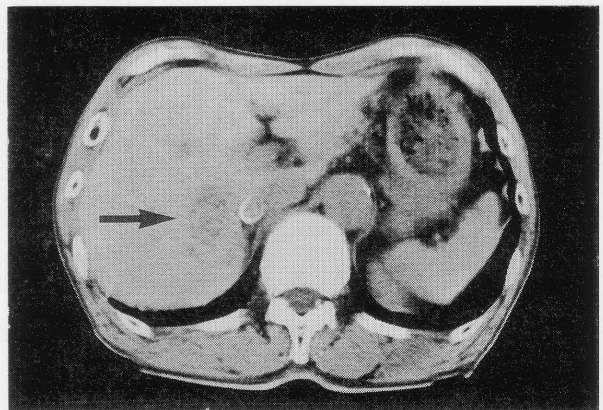


Fig. 3a Plain CT scan revealed a low density mass in the right lobe (S 7) of the liver (arrow).

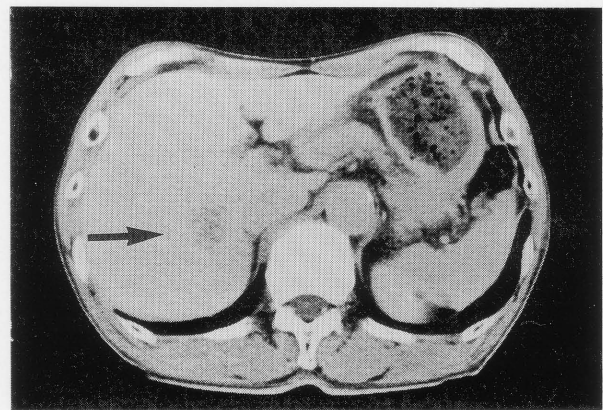


Fig. 3b Contrast enhanced CT showed no significant enhancement.

in areas where there is endemic hydatid disease is important in making an accurate diagnosis.⁵ This patient lived in Hokkaido, an area where there is an epidemic of hepatic alveolar echinococcosis. In many cases the primary diagnosis is made on the basis of an immunogenic study. US and/or CT can also play a role in the primary diagnosis or can be used for

screening or after dubious immunogenic results.⁶ The sonographic features of hepatic alveolar echinococcosis are that lesions are echogenic and ill-defined, single and multiple, with a propensity to spread to the liver hilum.^{5,6} In this case, the lesion was an inhomogeneous echogenic mass. The most frequent CT features of hepatic alveolar echinococcosis are that lesions are heterogeneous and hypodense with irregular contours, an indistinct margin, and without a well-defined wall. There is poor enhancement or none at all following bolus administration of intravenous contrast medium.^{5,6} In this case, CT showed an inhomogeneous soft tissue density mass with an unclear margin and no significant enhancement. These US and CT findings are compatible with hepatic alveolar echinococcosis.

Hydatid disease has been evaluated by scintigraphy with technetium-99m-labeled red blood cells.⁷ Whole-body scintigraphy with ^{99m}Tc-labeled red blood cells appeared suitable for screening patients with hydatid disease, many of whom had multiple organ involvement. The lesions appeared as defects on scanning. Groshar et al have reported that liver scintigraphy with ^{99m}Tc-sulfur colloid showed a focal liver defect caused by a hydatid cyst in the lung.⁸ This is the first report of colloid liver SPECT demonstrating a focal defect in the hepatic alveolar echinococcosis.

To sum up, we encounter a patient with hepatic alveolar echinococcosis. US and CT reveal a liver tumor. Colloid liver SPECT shows a defect in the liver tumor.

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