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Two Cases of Benign Liver Cysts with Elevated Concentrations of CA19-9 in Cystic Fluid

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Summary. **Two cases of benign cysts of the liver with a high concentration of CA19-9 in the cystic fluid are presented. Both patients complained of slight abdominal distension. Ultrasonography (US) and computed tomography (CT) revealed large cystic mass lesions in the liver. Serous fluid without atypical cells was obtained by percutaneous needle aspiration of the cysts; both cases had a high concentration of CA19-9 in the cystic fluid. Although both patients were treated by ethanol injection through the drainage tube into the cystic cavity, surgery was also required in one case. Positive immunohistochemical staining for CA19-9 was observed in the cytoplasm of the epithelial cells of the cyst wall in the surgical case. These results suggest that the high concentration of CA19-9 in the cystic fluid was due to the secretion from epithelial cells.**

INTRODUCTION

The differential diagnosis between cystic tumors and benign biliary cysts of the liver using several imaging modalities, such as computed tomography (CT), angiography, and ultrasonography (US) is often difficult.[1)] Recently, Iwase et al.[2)] have found that the cystic fluid of patients with benign lesions of the liver contains elevated CA19-9, the origin of which is unknown. We here report two additional cases if benign cysts of the liver with high concentrations of CA19-9 found within the cyst fluid.

CASE REPORTS

Case 1

A 56-year-old woman with a chief complaint of abdominal distension came to the Nagano Red Cross Hospital in April, 1993. US and CT (Fig. 1a) revealed large cystic mass lesions in the right lobe of the liver, and endoscopic retrograde cholangiopancreatography (ERCP) in May, 1993 failed to demonstrate a communication between the intrahepatic bile duct and the cystic lesion of the liver. The patient was admitted on July 8 for further evaluation and treatment. Serum concentrations of carcinoembryonic antigen ((CEA), 6.4 ng/ml) and CA19-9 (21 U/ml) were both within the normal range. Percutaneous transhepatic drainage (PTD) was performed ultrasonographically via a tube inserted into the cystic lesion on July 21. Sixty-hundred ml of serous watery fluid was aspirated. Cytologic examination of the cystic fluid revealed class 2 morphology, and a bacterial culture from the liver cyst was sterile.

The concentration of CEA in the cystic fluid was 13.0 ng/ml, which was slightly higher than the upper limit of normal for the serum. The concentration of CA19-9 in the fluid was 37724 U/ml, which was markedly higher than the normal serum concentration. Since no additional data suggested malignancy on further evaluation, we injected 100 ml of 99.9% ethanol through the drainage tube into the cystic lesion at 1-week intervals on July 23, 30, and August 6. Two weeks after the last ethanol injection, the liver cyst had decreased in size by CT, but the maximum diameter was still greater than 10 cm.

On August 30, a dome resection of the hepatic cyst was performed. Histologic examination confirmed the diagnosis of a benign cyst of the liver, and immunohistochemical staining for CA19-9 was positive in the cytoplasm of epithelial cells of the cyst wall (Fig. 1b). After surgery, the cyst became quite small on CT. The patient had an uneventful recovery and was discharged on September 19.

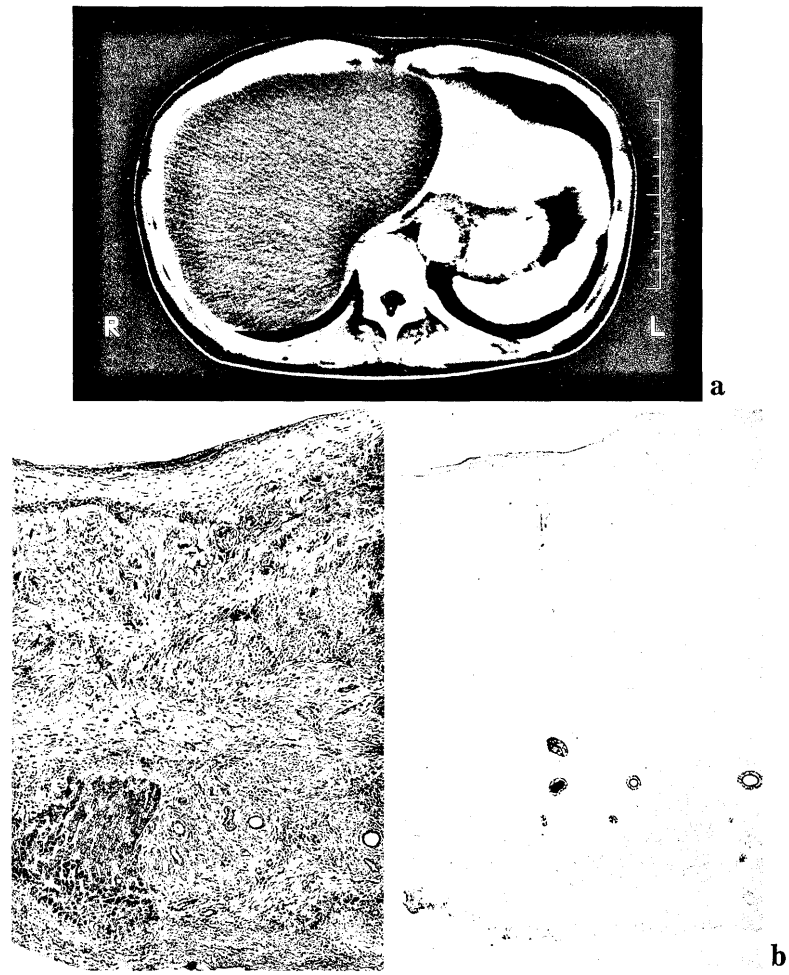

Fig. 1. a. CT of the abdomen showing a huge cystic lesion of the right lobe of the liver. **b.** Immunohistochemical staining against CA19-9 is positive in the cytoplasm of the epithelial cells of the liver cyst wall.

Case 2

A 73-year-old woman with abdominal distension visited the Nagano Red Cross Hospital in June, 1993. US and CT (Fig. 2a) revealed a huge cystic lesion in the caudate lobe of the liver, and ERCP in July 1993 could not demonstrate a connection between the intrahepatic bile duct and the cyst. The patient was admitted on August 30 for evaluation. Serum concentrations of CEA and CA19-9 concentrations were 2.0 ng/ml and 11 U/ml, respectively, and both were within the normal range. PTD was performed under ultrasound guidance via a tube inserted into the cyst on September 1. One thousand ml of serous, watery fluid was aspirated. Cytologic examination of the cystic fluid showed class 2 without atypical cells and bacterial culture from the liver cyst was sterile. The concentration of CEA in the cystic fluid of the liver was 5.1 ng/ml, which is in the normal range for serum. However, the CA19-9 concentration in the cystic fluid was 337,000 U/ml, which was much higher than the normal serum concentration. Since further clinical evaluation suggested that the cyst was benign, injection of 50 ml of 99.9% ethanol through the drainage tube into the cyst was performed at 1-week intervals on September 8, 14, and 21. Two weeks after the last ethanol injection, the liver cyst had decreased in size on CT (Fig. 2b). The patient had an uneventful subsequent hospital course and was discharged on October 2.

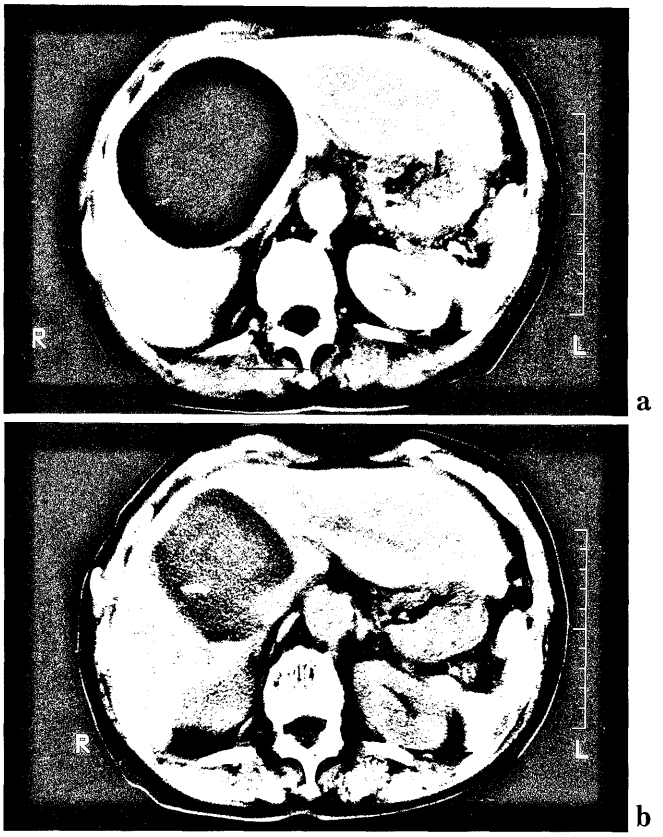

Fig. 2. a. CT of the abdomen showing a huge cystic lesion of the caudal lobe of the liver. **b.** The reduction of the cyst cavity in size can be observed after ethanol injection therapy.

DISCUSSION

CA19-9 is a high molecular weight glycolipid initially identified by a monoclonal antibody isolated from mice immunized with a human colon cancer cell line.[3] It has been useful as a serum tumor marker for pancreatic cancer.[4-6] Additionally, CA19-9 has been found in epithelial cells of the pancreatic duct, gall bladder and the intrahepatic bile duct,[7] and it has been detected in the bile at relatively elevated concentrations.[8]

In this study, the concentration of CA19-9 in cystic fluid of the liver was significantly higher than the upper limit of normal concentrations for serum in both cases. Further immunohistochemical staining for CA19-9 was positive in cytoplasm of liver cyst epithelial cells in Case 1. Since there was no communication between the intrahepatic bile duct and cyst, we hypothesize that the high concentration of CA19-9 in the cystic fluid was caused by secretion from biliary epithelial cells.

Several investigators have reported the usefulness of measuring the CA19-9 concentration of cystic fluid of the pancreas for the diagnosis of pancreatic cancer.[9,10] However, we are aware of only a single previous report in English medical literature describing CA19-9 concentrations in the fluid of liver cysts.[2] Our finding of an elevated CA19-9 concentration in benign cystic lesions of liver demonstrates the possible confusion associated with measuring tumor maker concentrations such as CA19-9 in cystic lesions. The usefulness of measuring the CA19-9 concentration in cystic fluid for the diagnosis of malignancy in cystic liver disease is presently unknown. However, the measurement of tumor markers including CA19-9 in cystic fluid for classifying cystic lesions of the liver can be expected to increase in the future.[2]

Surgical resection has been the standard therapy for large benign liver cysts for many years.[11,12] Recently, alcohol injection therapy was introduced[13]

for benign hepatic cysts, and surgical treatment is rapidly being replaced by this approach. In the two cases presented here, 99.9% ethanol injection was performed, which was successful for one of the cysts. The other case required dome resection because the diameter of the cyst was still more than 10 cm after ethanol injection. Nonetheless, alcohol injection into the cyst cavity should be considered a first-line therapy for probable benign lesions, even with high concentrations of CA19-9 in the cyst fluid.

In conclusion, the high concentration of CA19-9 in the liver cystic fluid likely resulted from secretion by the epithelial cells in benign biliary cysts, as reported previously.[2] However, the relevance to a high CA19-9 concentration in the differential diagnosis between malignant cystic tumors and benign cysts of the liver remains unknown.

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