---Case Reports---

Intracystic Hemorrhage Required No Treatment from One of Multiple Hepatic Cysts

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Abstract

We describe a patient with intracystic hemorrhage from one of multiple hepatic cysts. A 66-year-old woman was admitted to Nippon Medical School Hospital because of pain in the right upper quadrant of the abdomen. The medical history included multiple hepatic cysts and angina pectoris, which had been treated with aspirin. Three weeks before presentation, pain occurred in the right upper quadrant of the abdomen but resolved spontaneously. Ultrasonography revealed multiple hepatic cysts. One of the cysts in segment 8 had a hypoechoic structure and contained fluid. Computed tomography showed an area of homogenous density (diameter, 6 cm) which was slightly greater than that of the other hepatic cysts in segment 8. There was calcification of the cyst wall. On magnetic resonance imaging, this cyst showed heterogeneous hyperintensity on T1- and T2-weighted sequences which was greater than that of the other hepatic cysts. Intracystic hemorrhage of one of the multiple hepatic cysts was diagnosed. The pain gradually resolved without drainage, embolization, or operation, and the patient was discharged. After discharge, the upper abdominal pain did not recur. On magnetic resonance imaging 14 months later, the cyst showed heterogeneous hyperintensity on T1- and T2-weighted sequences which was less than that on the previous scan.

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Key words: intracystic hemorrhage, hepatic cyst, multiple, liver

Introduction

The prevalence of congenital hepatic cysts in the general population is estimated to be 2% to 4%. Most benign, nonparasitic hepatic cysts are asymptomatic, but complications can occur. Documented complications include obstructive...
jaundice\textsuperscript{7}, rupture\textsuperscript{7}, intracystic hemorrhage\textsuperscript{8,11}, and infection\textsuperscript{9,12}; the complication rate has been reported to be about 10\%, and hemorrhage and infection are the most common complications\textsuperscript{2}. Therefore, intracystic hemorrhage, especially from one of multiple hepatic cysts, is a rare complication, and few cases have been reported worldwide. We describe a patient with intracystic hemorrhage from one of multiple hepatic cysts.

**Case Report**

A 66-year-old woman was admitted to Nippon Medical School Hospital because of pain in the right upper quadrant of the abdomen. The past medical history included multiple hepatic cysts and angina pectoris, which had been treated with aspirin. Three weeks before presentation, pain occurred in right upper quadrant of the abdomen but resolved spontaneously. The results of initial laboratory tests were as follows: serum aspartate aminotransferase, 21 IU/L (normal, <28 IU/L); serum alanine aminotransferase, 18 IU/L (normal, <33 IU/L); serum lactic dehydrogenase, 206 IU/L (normal, 180 to 460 IU/L); serum gamma glutamic transpeptidase, 19 IU/L (normal, 8 to 39 IU/L); serum C-reactive protein, 0.23 mg/dL (normal, <0.3 mg/dL); white blood cell count, 3,200 /μL (normal, 4,000 to 8,000 /μL); red blood cell count, 429 × 10\(^3\) /μL (normal, 410 to 550 × 10\(^3\) /μL); serum hemoglobin concentration, 13.4 g/ dL (normal, 14 to 18 g/dL); and platelet count, 12.3 × 10\(^3\) /μL (normal, 20 to 40 × 10\(^3\) /μL). The prothrombin time was 97.5\% (normal, 70\% to 130\%), and the activated partial thromboplastin time was 26.3 seconds (normal, 24 to 37 seconds). Ultrasonography revealed multiple hepatic cysts. One of the cysts in segment 8 had a hypoechoic structure and contained fluid (Fig. 1). Computed tomography (CT) scan showed an area of homogenous density (diameter, 6 cm) which was slightly greater than that of the other hepatic cysts in segment 8. The cyst wall was calcified (Fig. 2). On magnetic resonance imaging (MRI), this cyst showed heterogeneous hyperintensity on T1- and T2- weighted sequences which was greater than that of the other hepatic cysts (Fig. 3a, b). Intracystic hemorrhage of one of the multiple hepatic cysts was diagnosed. Pain gradually resolved without drainage, embolization, or operation, and the patient was discharged. After discharge, the abdominal pain did not recur. On MRI 14 months later, the cyst showed heterogeneous hyperintensity on T1- and T2- weighted sequences which was less than that on the previous MRI scan (Fig. 3c, d).

**Discussion**

Simple hepatic cysts are common, benign, usually asymptomatic, and require no treatment. They occasionally resolve spontaneously but can also cause serious complications\textsuperscript{9,10,11}. Symptoms of hemorrhagic hepatic cysts are nonspecific and include abdominal pain, discomfort, and nausea. In
most cases, the cause of the intracystic hemorrhage is unclear. The wall of a hepatic cyst consists of 3 layers: an inner layer of loose connective tissue lined with cylindrical or cuboidal epithelium, a middle layer of compact connective tissue containing blood vessels, and an outer layer of loose connective tissue with large blood vessels, bile ducts, and occasional von Meyenburg complexes. The epithelial lining may undergo necrosis and sloughing if the intracystic pressure becomes too high. Injury to fragile blood vessels in the cyst wall and an increased risk of bleeding associated with the use of aspirin may thus have been responsible for the intracystic hemorrhage in our patient21.

Biliary cystadenocarcinomas are rare cystic tumors arising from the biliary epithelium. Differentiating hepatobiliary cystic neoplasms from simple hepatic cysts with internal hemorrhage is often difficult on the basis of clinical and radiological features because both lesions have intracystic structures23,24. However, some diagnostic techniques are useful for differentiating hemorrhagic hepatic cysts from cystic neoplasms25-27. Cytologic examination of cystic fluid obtained with aspiration under ultrasonographic guidance may provide important information for distinguishing malignant from benign lesions28. However, benign lesions are often difficult to distinguish from malignant lesions that lack characteristic features of malignancy. Moreover, aspiration of a cystic lesion can lead to tumor spread, cyst rupture, or bleeding. Ultrasonography and CT may show abnormal findings that mimic those of other conditions29,30. On ultrasonographic examination, hemorrhagic hepatic cysts typically contain fluid that is hyperechogenic compared with the fluid in simple cysts. On MRI, intracystic hemorrhage is frequently associated with internal signal intensities that mimic septations or solid portions as confirmed with surgery or percutaneous aspiration, suggesting that hyperintensity on T1- and T2- weighted MRI sequences can help differentiate internally hemorrhagic cysts from other cystic lesions. On T1-weighted images, the signal intensity of fluid changes from low to high as the protein concentration increases31. In our patient, the hemorrhagic cyst heterogeneously showed hyperintensity on T1- and T2- weighted sequences.
which was greater than that of other hepatic cysts. After 14 months, the cyst showed heterogeneous hyperintensity on T1- and T2- weighted sequences which was less than that on the previous MRI scan. The signal intensity of hemorrhage decreases when clots are liquefied\(^2\). On CT and MRI, the walls of most cysts are thin and smooth and are not enhanced after intravenous injection of contrast medium. However, enhanced thick walls are occasionally seen when inflammation, granulation, or fibrosis occurs. Calcification of the cyst wall may occur but may also be seen in simple cysts. After hemorrhage, cyst fluid is usually hyperdense on CT and T1- weighted MR images and hypointense to hyperintense on T2- weighted images. A fluid-fluid level is sometimes observed.

Treatment recommendations for symptomatic hepatic cysts include surgery\(^3\) and the injection of a sclerosing agent into the cyst\(^4-6\). The clinical presentation of spontaneous intracystic hemorrhage usually begins with severe abdominal pain of sudden onset, followed by a gradual decrease in pain and healing with conservative therapy\(^8\). Then, the intracystic hemorrhage may be treated conservatively and closely observed, if no acute abdominal symptoms develop\(^7\), and if cystic liver tumors, such as cystadenoma and cystadencarcinoma, are ruled out with imaging studies, such as ultrasound, contrast-enhanced ultrasound\(^9\), CT, and MRI.

References

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