

Ectopic Partial Intrahepatic Gallbladder: Magnetic Resonance Imaging and Clinical Findings

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Abstract- Ectopic gallbladder (GB) is a very rare anomaly. Ectopic GB can be found in intrahepatic, suprahepatic, retrohepatic, retroperitoneal sites as well as in falciform ligament, intra-abdominal wall, left abdominal quadrant and intrathoracic localizations. A 43-year-old male patient presented with a right upper quadrant pain in the abdomen. Upon detection of a cystic lesion with lobulated contour associated with GB in the liver in ultrasound examination, dynamic magnetic resonance imaging (MRI), MRI cholangiopancreatography, and contrast-enhanced MRI cholangiography were performed on the patient. MRI revealed that the lesion was a partial ectopic intrahepatic GB. In this article, we presented an ectopic partial intrahepatic gall bladder anomaly, which is very uncommon and has been previously described by surgical operations and cadaver studies, according to our literature review.

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Introduction

An ectopic intrahepatic gallbladder (GB) is the one that is partially or completely embedded within the liver parenchyma (1). Intrahepatic GB usually has an impaired function that leads to stasis and stone development (2).

Radiological diagnosis may be challenging in cases of ectopic GB, which occur very rare. If intrahepatic GB is accompanied by abnormalities of the intrahepatic biliary and vascular tree, the surgical procedure may be dangerous. Appropriate modifications of the surgical approach and technique are required in these patients (3).

GB and gall stones are primarily evaluated by ultrasound (US). When necessary, various imaging modalities such as computed tomography (CT), magnetic resonance imaging (MRI), and endoscopic retrograde cholangiopancreatography (ERCP) can be used to assess GB and biliary tracts (3).

In this article, we aimed to present an ectopic partial intrahepatic GB anomaly, which is, according to our literature review, a very rare condition and previously described by surgical operations or cadaver studies.

Case Report

A 43-year-old male patient with right upper quadrant abdominal pain underwent an emergency examination. Physical examination revealed right upper quadrant tenderness. The patient had not personal or family medical history. The patient did not use any drugs or alcohol. Laboratory test results were normal and cyst hydatid hemagglutination test was negative [white blood cell $8,9 \times 10^3/\mu\text{L}$ (normal $4-11 \times 10^3/\mu\text{L}$), bilirubin 0,9 mg/dL (normal 0, 2-1, 2 mg/dL), aspartate aminotransferase 15 U/L (normal 5-34 U/L), alanine aminotransferase 27 U/L (normal 0-55 U/L), alkaline phosphatase 41 U/L (normal 20-140 U/L), gamma-glutamyl transpeptidase 20 U/L (normal 9-64 U/L), amylase 40 U/L (normal 25-1125 U/L)]. Ultrasound examination revealed a cystic lesion in the liver connected to GB with lobulated contours.

Upon this finding, Magnetic Resonance Cholangio-Pancreatography (MRCP) without contrast medium and IV Gadoxetate disodium (brand name Primovist, Germany) were performed on the patient with 1,5 tesla MR device (GE, SIGNA Explorer, General Electric, Milwaukee, US) dynamic upper abdomen MRI and MRI with LAVA- Flex sequence MRI 30th and 60th minutes

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following contrast injection was performed on axial and coronal planes for the GB and biliary tracts.

In MRCP and conventional Abdomen MRI images, the lesion had a tortuous shape at the level of segment 8 of the liver, about 70 mm of which was situated intrahepatic and reached 23 mm in width in the axial plane. It was observed that the lesion had no septa, and was connected with the GB and had a well-defined thin wall. No wall irregularity or septa and membranes that may suggest a fistulized cyst from the liver into gall bladder were seen in the lesion. In the MRI LAVA-Flex sequences 60 minutes after the contrast medium injection, the lesion was filled homogeneously with contrast, and no intraluminal or wall pathology was seen in the GB and biliary tracts, and contrast media extravasation was not observed (Figure 1, 2, 3). With these findings, the patient was diagnosed as ectopic partial intrahepatic GB.

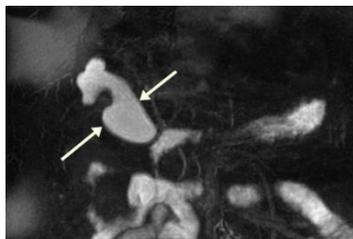


Figure 1. An atypical cystic appearance connected to the gallbladder with lobulated contour is seen in magnetic resonance cholangiopancreatography (arrows)

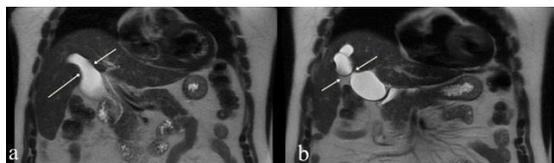


Figure 2a, b. In the magnetic resonance imaging T2 sequences on the coronal plane, a tortuous lesion associated with gall bladder in the right lobe of the liver is seen (arrows)

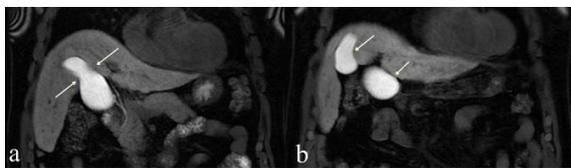


Figure 3a, b. In the magnetic resonance imaging, LAVA-Flex sequences on the coronal plane have taken at 60 min after intravenous contrast injection, the lesion in the right lobe of the liver is seen to be homogeneously filled with contrast medium (arrows, ectopic partial intrahepatic gallbladder)

In our case, the patient's pain relieved after 3 days. We did not perform surgery because the luminal

pathology was not observed. Intraluminal pathology was not seen during the ultrasound examination of the patient who remained asymptomatic at the 6th month of follow up.

Discussion

Various anomalies of GB have been reported in the literature. Intrahepatic GB is a very rare congenital anomaly. The incidence of ectopic GB has been reported between 0.1 and 0.7% (4). A failure or an obstacle for the placement of GB from the intrahepatic to its normal superficial position leads to ectopic GB. Ectopic intrahepatic GB is a condition characterized by partial or complete embedment of GB in the liver parenchyma. Clinical diagnosis is difficult if cholecystitis is present in cases with ectopic intrahepatic GB (1). Ectopic intrahepatic GB usually involves an impaired function that leads to stasis and stone development (2). In our case, cholecystitis or gallstones were not present. There was only a nonspecific right upper quadrant pain in the abdomen, and the pain disappeared during the clinical monitoring. We think that this short-lived pain in our patient might be due to dysfunction of the intrahepatic bile duct or might be incidental. The malpositions of ectopic GB are frequently left-sided, in the transverse position, retroperitoneal, and have a rotating/displacing manner (4). It has also been reported that GB can be found in intrahepatic, suprahepatic, retrohepatic sites, as well as in falciform ligament, abdominal wall, lesser omentum, retrodeudonal area and intrathoracic localizations (3,5). In our case, GB was partially intrahepatic; our literature review revealed that partially intrahepatic GB was previously described only in the intraoperative period or in the cadaver studies (4,6,7).

US, CT, and radionuclide imaging are methods that can identify ectopic GB. The US cannot always be helpful due to increased intestinal gases. The MRCP confirms the diagnosis and characterizes the anomaly (8). Conventional MRCP is performed essentially using T2 weighted sequences without contrast media. Recently, it has been reported that magnetic resonance cholangiography (contrast-enhanced MRC) performed with a contrast medium that is excreted via bile tracts is superior to MRCP in biliary variations (9).

In our case, the US did not provide enough information. In CT scan, the fact that GB entered into the liver with a narrow neck and its intrahepatic part appeared tortuous did not suffice for a diagnosis. Therefore an intrahepatic cystic lesion, which may have fistulized into GB, could not be ruled out. However,

conventional MRCP and dynamic upper abdomen MRI revealed that the lesion was associated with GB and had no septa or membrane in the lumen. Contrast-enhanced MRC definitely confirmed these findings. The limitation of this study is that our diagnosis made by contrast-enhanced MRC could not be proven intraoperatively.

Surgery is recommended in cases of ectopic cholelithiasis, even if it is asymptomatic (10,11). We did not operate on our patient because the pain had disappeared and there was no other pathology in the gallbladder. The first line diagnostic imaging modality for GB abnormalities is the US. In US imaging, when GB cannot be seen in its usual localization or when a cystic lesion is observed in its vicinity, intrahepatic GB should be kept in mind and advanced imaging methods should be performed. The preoperative diagnosis of ectopic intrahepatic GB is very important to prevent intra-operative complications.

In conclusion, patients with ectopic GB, contrast-enhanced MRC, can provide more detailed information in preoperative diagnosis and planning. Surgery is not necessary if there is no pathology in ectopic intrahepatic GB.

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