

A rare cause of obstructive jaundice in adolescent patient: Ruptured hydatid cyst into the biliary duct

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Dear Editor

Hydatid cyst is a parasitic disease caused by *Echinococcus granulosus*; liver and lung involvement is most common in humans. This disease is common in the Middle and the Far East, Europe, Asia, South America and Australia (1). The incidence of hydatid cyst among children in Turkey was reported to be 0.0015% (2).

The most common complication of hepatic hydatid cyst is rupture into the biliary tract, which has been estimated to occur in 6–17% of cases. Rupture into the hepatic ducts is frequently observed, but rupture into the gallbladder is quite rare (3,4). Rupture into the biliary tract can be either minor or major. Major ruptures, which are observed in only 5–15% of cases, are a rare but serious condition (5).

As a result of rupture into the biliary tract, obstructive jaundice, cholangitis, and pancreatitis can ensue; the last condition is relatively rare. Ultrasonography (US), Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Magnetic Resonance Cholangiopancreatography (MRCP) and Endoscopic Retrograde Cholangiopancreatography (ERCP) are used for diagnosing complications associated with hydatid cyst. ERCP is a gold-standard but invasive method used for the diagnosis and treatment rupture into the biliary tract (1).

Here, we present MRI and MRCP findings of hydatid cyst that ruptured into the biliary ducts of a 16-year-old male patient with obstructive jaundice.

A 16-year-old male patient was admitted to our emergency service with complaints of abdominal pain, jaundice, and vomiting for five continuous days. A physical examination revealed tenderness in the right upper quadrant (RUQ). No

features were found in his medical history. In the laboratory findings, there was an increase in total and direct bilirubin (2.6 and 2.01 mg/dL, respectively), AST (76 U/L), ALT (181 U/L), and GGT (180 U/L) levels.

Abdominal US (Siemens Acuson S2000, Mountain View, CA, USA) revealed a multicomponent cystic lesion (Gharbi type III, WHO CE2 hydatid cyst) in the posterior segment of the right lobe of the liver. In addition, the common bile duct was seen to be dilated, and a ring-shaped echogenicity (membranes) was observed within the lumen. MRI and MRCP (1.5 T, Philips Achieva, Koninklijke, Netherlands) were performed for the ruptured hydatid cyst into the biliary tract. During MRI and MRCP examinations, multilocular cystic lesions were detected 64 x 58 x 76 mm (ap x ml x cc) in size in liver segment VII - VIII and 65 x 50 x 58 mm in size in liver segment IV - VIII (Figure 1, 2). A direct relationship was found between the lesion located in the liver segment IV - VIII and the right hepatic canal (Figure 1 C). The common bile duct, the main and right-left hepatic ducts were seen to be dilated and the intensities of the hydatid cyst membranes were seen within the lumen of the common bile duct (Figure 1 A). The findings supported the ruptured hydatid cyst in the biliary duct. ERCP was performed for treatment purposes, and the membranes observed in the bile ducts were cleaned. The patient was then discharged with albendazole treatment.

Spontaneous rupture of the liver hydatid cyst is the most common complication. The main factors causing rupture are trauma, infection, and increase in pressure due to progressive size increase in the cyst. Although the most common rupture was seen into the bile duct (90%), rarely was also reported into the thorax, peritoneum and subcutaneous area (6).

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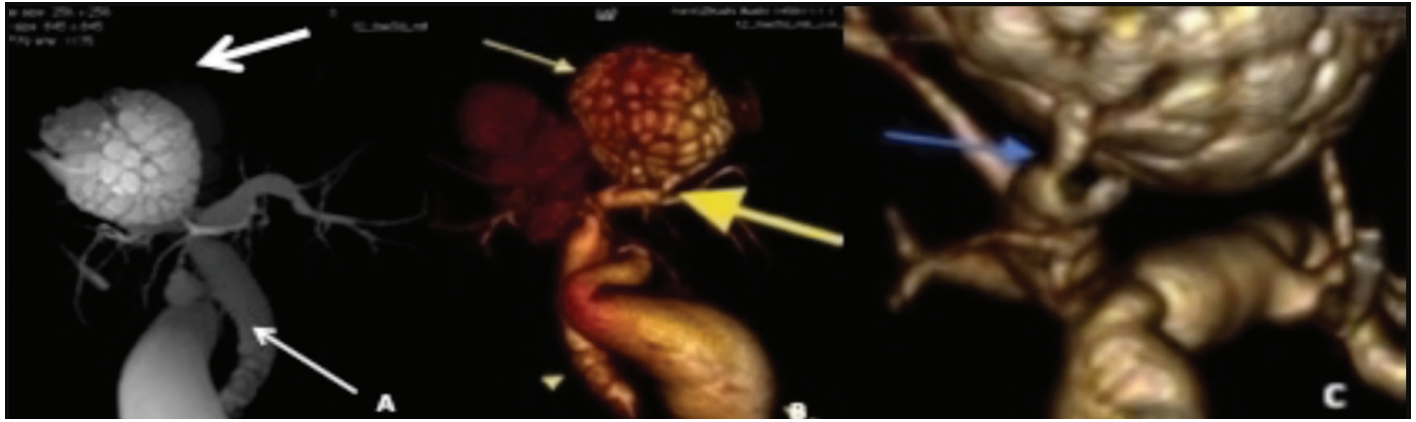


Figure 1 A. On coronal MIP (maximum intensity projection) MRCP image show that; Multilocular cystic lesion (thick arrow) compatible with type III hydatid cyst of multiple girl vesicles, dilatation in intra and extra bile ducts, and membranous structures in the lumen (thin arrow) in distal part of the common bile duct. B. 3D VR (Volume Rendering) MRCP image show that; type III hydatid cyst (thin arrow), dilated common bile duct (arrowhead), distended gallbladder (dashed arrow), connection point between the hydatid cyst and the right hepatic canal (thick arrow). C. 3D VR MRCP image show that; a direct relationship between hydatid cyst and right hepatic canal (arrow)

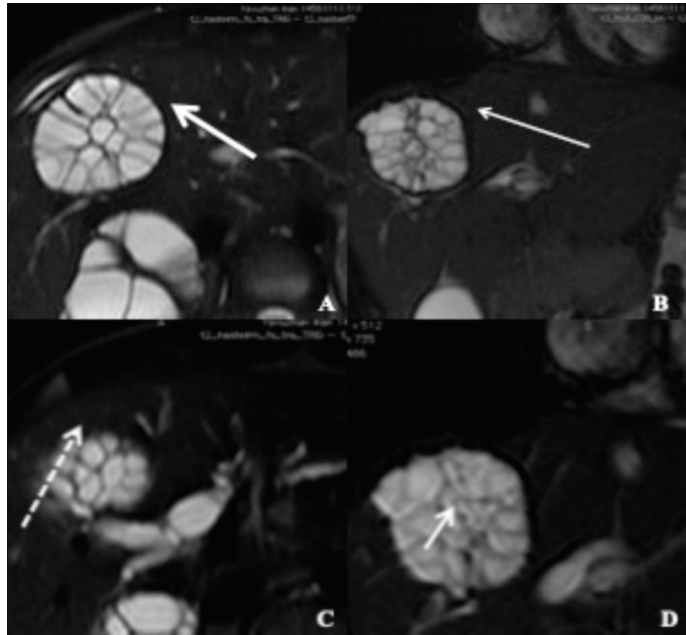


Figure 2 A. On fat-suppressed axial T2W MR image shows that; hypointense rim (thick arrow) of an intact pericyst in a multilocular cystic lesion wall compatible with type III hydatid cyst. B. On fat-suppressed coronal T2W MinIP (minimum intensity projection) MR image show that; the low-intensity rim of the pericyst is more clearly observed in the cyst wall (thin arrow). C. and D. On fat-suppressed axial and coronal T2W images show that; hydatid cyst posteroinferior adjacent to the biliary tract canal-like extension from the cyst wall towards the pericystic area (dashed arrow and short arrow)

When a hydatid cyst ruptures into the biliary tract, biliary colic, intermittent or progressive obstructive jaundice may occur due to the passage of girl vesicles or ruptured membranes with cystic fluid into the biliary tract. Biliary obstruction is seen 5–17% of the time after a rupture. According to reports, if the cystobiliary distance is greater

than 5 mm, 65% of the cyst contents pass into the biliary tract (7, 8). A delay in the diagnosis and treatment of ruptures of the biliary tract can cause serious morbidity and mortality. Sepsis and hepatic insufficiency are the main causes of mortality (7).

There are direct and indirect findings in the radiological diagnosis of hydatid cyst rupture into the biliary tract. The most important direct sign of rupture is the relation among the cyst and biliary tract. Deformed cyst appearance is an indicator of intracystic pressure reduction, and may be indirect evidence of rupture (8).

Abdominal US is the most commonly used method for the investigation of hydatid cyst ruptures. Echogenic materials suggestive of vesicles or membranes may be seen in the enlarged extrahepatic biliary tract. A direct relationship between hydatid cysts and bile ducts with US can be seen in only 20% of cases. MRI and MRCP findings may be prove very useful in demonstrating the rupture of a liver hydatid cyst into the biliary tract. The pericyst is the outermost sheath of the hydatid cyst and comprise of thick and avascular fibrous tissue, which may be contain a bile duct. The pericyst is generally seen as hypointense in the T2-weighted images; when there is a focal defect or absence in the cyst wall, it is a direct sign of rupture and is seen in 75% of cases (8). A beak-like extension can be seen from the cyst wall to the pericystic area. A cystobiliary rupture is likely to be diagnosed if there is a bile duct extending from the area of the absent cystic wall to the porta hepatis. Fluid levels in the lumen of the bile ducts, air presence, and signal intensity changes are indirect findings (6). Erden et al. reported that the sensitivity of MRCP at 91.7% and the specificity of 82.8% in the presence of visible cystobiliary linkage, hydatid cyst in deformed appearance, focal defect in the cyst wall, and beak-like extension of the cyst wall (8).

Albendazole and mebendazole are used in the medical

treatment of hydatid cyst. Used prior to surgery along with interventional procedures reduces the risk of recurrence (8).

In conclusion, rupture of hydatid cysts into the bile duct is a life threatening condition. MRI and MRCP have a vital role in the diagnosis and timely management of disease as a noninvasive imaging method. To avoid mortality, both clinicians and radiologists should be familiar with its MRI and MRCP findings.

Competing interests: The authors declare that they have no competing interest.

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