

Gallbladder agenesis with common bile duct stone - A rare case with a brief review of the literature

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We present herein the case of a 45-year-old female who presented with obstructive jaundice and was diagnosed as agenesis of the gallbladder with choledocholithiasis. We discuss the radiological and operative features along with a brief literature review of this uncommon entity.

Key words: Gallbladder, agenesis, jaundice, choledocholithiasis

Ortak safra kanalı taşı ile safra kesesi agenezinin birlikteliği – Nadir bir vaka sunumu ve literatürün gözden geçirilmesi

Burada, tıkanma sarılığı ile başvuran ve safra kesesi agenezisi ile koledokolitiazis tanısı alan 45 yaşında kadın hasta sunulmuştur. Hastanın radyolojik ve operatif bulguları ile birlikte bu nadir görülen antite hakkındaki literatür tartışılmıştır.

Anahtar kelimeler: Safra kesesi, agenezis, sarılık, koledokolitiazis

INTRODUCTION

Agenesis of the gallbladder is an extremely rare condition, with an incidence of 0.01-0.02%, which was reported for the first time in humans by Bergman in 1702 (1). It is difficult to diagnose preoperatively, as investigations can be misleading. However, careful and detailed sonography and other radiological investigations may suggest the diagnosis.

CASE REPORT

A 45-year-old female presented with a history of acute pain in the epigastrium and right hypochondrium for the previous 12 days, which was aggravated after eating. There was a history of similar episodes intermittently over the last six months. For the last six days, the patient also had low-grade fever and mild jaundice. On clinical examination,

she was febrile with mild icterus and mild tenderness in the right hypochondrium. Relevant hematological investigations were as follows: total bilirubin: 1.31 mg/dl, direct bilirubin: 0.72 mg/dl, alkaline phosphatase: 72.11 IU, SGOT: 39 IU/L, and SGPT: 37 IU/L.

On ultrasound, the liver was normal; the common bile duct (CBD) was dilated and measured 11 mm, and a large 2.3 cm calculus with post-acoustic shadowing was present at the lower end of the CBD (Figure 1). Despite the best efforts, the gallbladder could not be localized, and no gallbladder fossa or wall-echo-shadow (WES) was visualized. Intrahepatic biliary radicals (IHBR) with right and left hepatic ducts were prominent because of distal obstruction.

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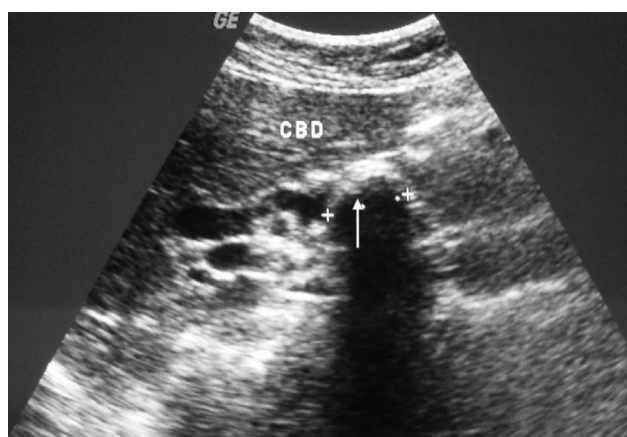


Figure 1. Ultrasonography shows dilated common bile duct (CBD) with large calculus (arrow) at the lower end.

Magnetic resonance cholangiopancreatography (MRCP) was planned for the hepatobiliary system but could not be done as the patient had a metallic implant in her arm. She was thus sent for contrast enhanced computed tomography (CECT) of the abdomen. CECT was done using a spiral CT scanner (Somatom, Siemens; Erlangen), with contrast scan done after giving 80 ml of nonionic contrast. On CECT, IHBR and right and left hepatic ducts were dilated. The gallbladder was not visualized nor any area of gallbladder fossa or cystic duct (Figure 2). The CBD was dilated, measuring 11 mm, with a large 2.2 cm radiopaque calculus seen in the lower end (Figure 3). The rest of the abdomen was normal. Based on ultrasonography (USG) and CT findings, a diagnosis of gallbladder agenesis with choledocholithiasis was made.

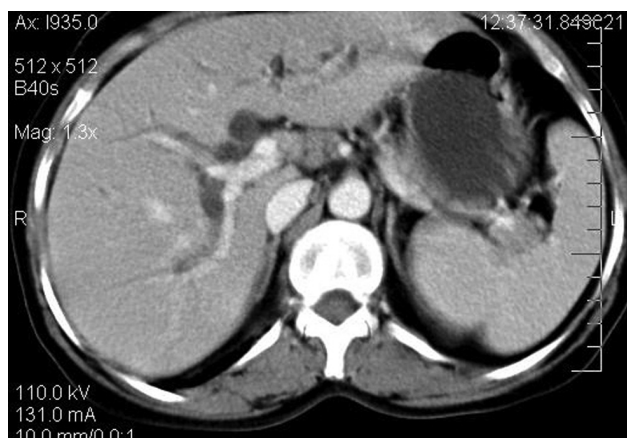


Figure 2. Contrast enhanced computed tomography (CECT) shows dilated intrahepatic biliary radicals (IHBR), right and left hepatic ducts, CBD with a large calculus (arrow), and absence of gallbladder.

On laparotomy, no gallbladder or gallbladder fossa was visualized. A meticulous search for the gallbladder in other possible sites, such as intrahepatic, left-sided, between the leaves of the lesser omentum, retroperitoneal, retrohepatic, or in the falciform ligament, etc., was unsuccessful. The CBD was dilated with a large calculus at the lower end starting from the extrahepatic portion; choledocholithotomy with choledochoduodenostomy was done, and a large 2.3 cm calculus was removed. The postoperative period was uneventful and the patient was well at the six-month follow-up.

DISCUSSION

Agenesis of the gallbladder is characterized by the absence of the gallbladder without atresia of the extrahepatic biliary system, and it is an extremely rare condition, with an incidence of 0.01%-0.02% [1]. The pathogenesis is related to the embryonic development. During the fifth week of intrauterine life, the gallbladder and the cystic duct start to develop as a bud from the CBD. Agenesis of the gallbladder results due to failure of the bud to proliferate or canalize. Some reports suggest that gallbladder agenesis may be familial (1,2).

Bennion et al. (1) described three groups of patients with gallbladder agenesis. The first group has multiple fetal anomalies, and patients die of the other coexisting anomalies, with gallbladder agenesis recognized at autopsy. The second group is the asymptomatic group in which gallbladder agenesis is discovered incidentally at autopsy or laparotomy. The third group is the symptomatic

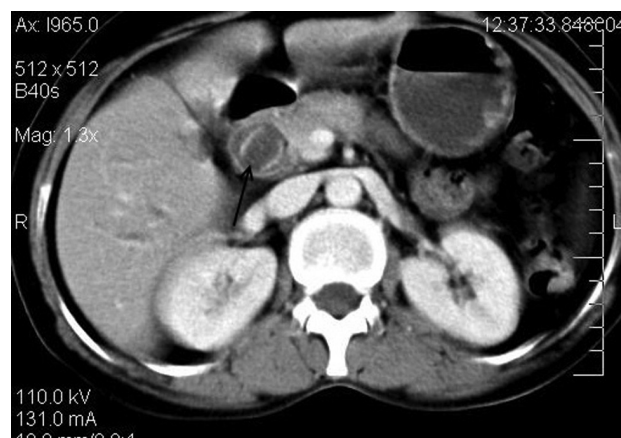


Figure 3. The CBD was dilated, measuring 11 mm, with a large 2.2 cm radiopaque calculus in the lower end.

group comprising patients who present with symptoms related to the hepatobiliary system (1). Our case belongs to the third group. Choledocholithiasis is probably the result of biliary dyskinesia that can cause stasis and enhance the development of calculi (3). The incidence of this malformation is greater in autopsy reports (0.04%-0.13%) than in surgical cholecystectomy series (0.007-0.027%) (3).

The pre-operative diagnosis of gallbladder agenesis is very difficult because of the rarity of the condition and the limitation of imaging techniques (4). USG is the first-choice and reliable investigation for gallbladder and hepatobiliary diseases. However, the pre-operative USG usually describes a non-visualized gallbladder as a shrunken gallbladder because of inflammation and being filled with stones, acalculous cholecystitis, or as a scarred gallbladder (1,5-7). According to Hammond (9), there is always a segment of wall or thin rim of bile identifying the gallbladder, if the gallbladder is present (8). Thus, if detailed careful sonography by an experienced sonologist cannot visualize the wall of the gallbladder, then the possibility of gallbladder agenesis should be considered. Intestinal gas artifacts can sometimes be diagnosed as a contracted gallbladder filled with stones, giving the WES triad; however, in the WES triad, the wall of the gallbladder should also be seen as suggested by McDonald *et al.* (10). Other preopera-

tive investigations for the hepatobiliary tract are oral cholecystography (OCG), intravenous cholangiography (IVC), CT, MRCP, hepatobiliary scintigraphy, and endoscopic retrograde cholangiopancreatography (ERCP). In OCG, IVC, ERCP, and scintigraphy, gallbladder agenesis is often misdiagnosed as nonfunctioning or diseased gallbladder, acalculous cholecystitis, chronic cholecystitis, or obstruction of the cystic duct (6,7). MRCP is a noninvasive and well-demonstrated imaging method in the evaluation of the biliary tract. It is not compromised by biliary stasis as it does not require contrast for bile demonstration, so it is a better investigation for agenesis or ectopic gallbladder. However, while it may not replace ultrasound, it is a complementary study to USG (8). However, there are some limitations to MRI, as also seen in this case.

In conclusion, gallbladder agenesis is an unusual anomaly. This condition must be kept in mind in the differential diagnosis of ultrasonographically undetected or scleroatrophic gallbladder. When the WES triad or double arc shadow is not seen clearly on USG, this congenital malformation should be suspected. Although the diagnosis of gallbladder agenesis can only be made perioperatively, a certain degree of suspicion must be raised pre-operatively with the imaging techniques, which is helpful for the operating surgeon.

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