Retrohepatic Gallbladder Masquerading as Hydatid Cyst in a Patient with Right Liver Agenesis

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Resumat

Veziculă biliară retrohepatică sugerând un chist hidatic la un pacient cu agenezie de lob drept hepatic

Agenesia de lob drept hepatic este o anomalie congenitală rară, ce poate fi asociată cu veziculă biliară ectopică. Este prezentat cazul unui pacient de 39 de ani investigat pentru dureri în hipocondrul drept și diagnosticat le examinarea computer tomograf cu o masă chistică la nivelul ficatului, interpretată inițial ca fiind un chist hidatic. După laparotomie, diagnosticul a fost de agenezie de lob drept hepatic, iar presupusul chist hidatic era în fapt o veziculă biliară cu dispoziție retrohepatică, cu conținut litiazic. S-a practicat colecistectomie, cu evoluție postoperatorie favorabilă. Reevaluarea imaginilor examinării computer tomograf de către un radiolog experimentat a confirmat diagnosticul intraoperator. Deși agenezia de lob drept hepatic cu veziculă biliară retrohepatică constituie o entitate clinică de excepție, chirurgii trebuie să fie avizați asupra existenței acestei anomalii deoarece poate pune probleme atât de diagnostic cât și de strategie chirurgicală, în timpul colecistectomiei.

Cuvinte cheie: veziculă biliară retrohepatică, agenezie de lob drept hepatic, computer tomografie

Abstract

Agenesis of the right liver is a rare congenital anomaly which can
be associated with an ectopic gallbladder. Hereby, it is presented the case of a 39-year-old man investigated for right upper quadrant abdominal pain and diagnosed at computed tomography with a cystic liver mass initially considered as hydatid cyst. At laparotomy, it was discovered agenesis of the right liver and the presumed hydatid cyst was a retrohepatic gallbladder with lithiasis. Cholecystectomy was performed with an uneventful outcome. Reassessment of the computed tomography images by an experienced radiologist confirmed the intraoperative diagnosis. Although agenesis of the right liver with retrohepatic gallbladder is an exceptional appearance, surgeons should be aware of this anomaly because it can raise challenging issues of diagnosis and surgical planning during cholecystectomy.

**Key words:** retrohepatic gallbladder, right liver agenesis, computed tomography

**Introduction**

Retrohepatic gallbladders have been reported in the literature in few patients and are usually associated with other abnormalities such right liver agenesis or hypoplasia (1,2). However, the diagnosis of this uncommon pathology is sometimes challenging. Hereby it is presented the case of a patient with a retrohepatic gallbladder that was preoperatively misinterpreted as a hydatid cyst of the liver.

**Case report**

A 39-year-old man was admitted to Fundeni Clinical Institute in Bucharest for right upper quadrant abdominal pain. The symptoms appeared few months before the presentation. The medical history included a laparotomy for unknown reasons. The clinical examination did not reveal any pathological changes. The laboratory findings were within normal limits, except for a mild elevation of serum amino-transferase levels. Contrast-enhanced computed tomography revealed a large cystic liver lesion of 9.6/5.5/4.9 cm, with a 2/1.5 cm nodular calcification; the cystic lesion was well circumscribed, with iodophyl thickened walls of 0.3 cm and fluid content (Fig. 1). The lesion was initially considered a hydatid cyst. It was also noticed the absence of right liver (parenchyma, right hepatic vein, right portal vein, right hepatic artery) (Fig. 2-3). Furthermore, the ELISA test for Echinococcus granulosus was equivocal. With a preoperative diagnosis of hydatid cyst of the liver, the patient was submitted to surgery in May 2017. At laparotomy, the presumed hydatid

![Figure 1](image-url) **Figure 1.** Contrast-enhanced computed tomography (axial plane) showing (A) the cystic lesion of the liver (white arrow) with (B) calcifications (black arrow) suggesting a liver hydatid cyst.
cyst of the liver was actually a retrohepatic gallbladder with lithiasis associated with agenesis of the right liver and compensatory hypertrophy of the left liver (Fig. 4). A cholecystectomy was performed with an uneventful postoperative outcome; the patient was discharged on postoperative day 5.

Reassessment of the computed tomography images by an experienced radiologist confirmed the intraoperative diagnosis. Thus, it was
observed the retrohepatic gallbladder with lithiasis, agenesis of right liver, with the absence of right portal vein, right hepatic vein and right hepatic artery, and the compensatory hypertrophy of the left liver (Fig. 5-6).

Discussion

Agenesis of the right liver is a rare congenital anomaly, with slightly male predominance, defined by the absence of liver tissue on the right side, without previous disease or surgery (1-4). The absence of right hepatic vein, right portal vein and the right hepatic artery is highly suggestive for diagnosis of right liver agenesis (1). It is assumed that this anomaly is caused by the developmental failure of the right portal vein or an error in mutual induction between the primitive diaphragm and the endodermal diverticulum representing the primitive liver (2). The condition is mostly asymptomatic and discovered accidentally, by
imaging exams or abdominal surgery (1-4). The agenesis of the right liver is often associated with other anatomical variations or diseases such compensatory hypertrophy of the remaining segments, right diaphragmatic hernia, portal hypertension, the interposition of the hepatic flexure of the colon or ectopic gallbladder with or without lithiasis (1-4). It was presumed that a displaced gallbladder might favor the occurrence of lithiasis due to torsion or compression of cystic duct (2). An ectopic gallbladder might also increase the risk of bile duct injuries during cholecystectomy for lithiasis (3,5). Thus, accurate preoperative localization of the gallbladder is of utmost importance to plan the surgical approach for cholecystectomy and to avoid complications. It is important to differentiate right liver agenesis from severe right lobe atrophy, which appears in other liver conditions such liver cirrhosis, cholangiocarcinoma or previous liver surgery (1,2,4).

**Conclusions**

Although agenesis of the right liver with retrohepatic gallbladder is an exceptional appearance, surgeons should be aware of this anomaly because it can raise challenging issues of diagnosis and surgical planning during cholecystectomy.

**Conflicts of Interest**

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript

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**Authors’ contributions**

GD, AM, IL, MC and TD all have made substantial contribution to acquisition of data, conception, analysis and interpretation of data. All authors have been involved in drafting the manuscript and revising it critically for important intellectual content. All authors read and approved the final manuscript and take public responsibility for appropriate portions of the content and agreed to be accountable for all aspects of work.

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