CASE REPORT

Duplex gall bladder: bystander or culprit

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SUMMARY

Gall bladder (GB) duplication is a rare anatomical malformation, which can be detected by preoperative imaging study. We present a case of duplex gall bladder in a 14-year-old boy who presented with abdominal pain. On ultrasound, he had right nephrolithiasis and duplex gall bladder. Duplex gall bladder was confirmed on MR cholangiopancreatography. There was a dilemma for surgical management of duplex gall bladder; however, he became asymptomatic after conservative treatment. Prophylactic surgery is not recommended for asymptomatic incidentally detected duplex gall bladder. Radiologists and paediatric surgeons should be sensitised about the exact anatomy of this entity.

BACKGROUND

Duplex gall bladder is a rare congenital anomaly with the reported incidence of about 1 per 4000 births.¹ It may be a pathological or an incidental finding on imaging. In the modern era, laparoscopic cholecystectomy is recommended in symptomatic patients. Anatomical variations of gall bladder (GB) positions and their congenital anomalies are associated with an increased risk of complications after laparoscopic cholecystectomy.² Preoperative awareness of this anatomical variation can minimise the chance of an unexpected course of cholecystectomy and avoid damage to the biliary tract. MR cholangiopancreatography (MRCP) is superior in defining finer anatomical details of the cystic duct and adjoining structures. Our case has incidental finding and was managed conservatively. For asymptomatic incidentally found duplex gall bladder, prophylactic surgery is not recommended.³

CASE PRESENTATION

A 14-year-old boy presented to paediatric emergency with mild, intermittent, non-colicky right upper quadrant pain localised primarily to the right renal angle. There was no history of vomiting, fever, burning micturition or haematuria. The general physical examination was normal. On local examination, there was mild tenderness at the right renal angle; however, the rest of the examination was normal. There was no prior history of such episode.

INVESTIGATIONS

Complete blood count, liver function test and renal function tests were within normal range. On ultrasound examination of the abdomen, two separate ellipsoidal anechoic cystic structures lying side by side in the gall bladder fossa were noted. Both appeared normal, with normal wall thickness,

dimensions and echotexture (figure 1). Both antero-posterior cystic structures were identified as two separate gall bladders with separate neck and non-dilated common bile duct (CBD). Gall bladder lumen was echo free and there was no calculi or sludge. On ultrasound of the urinary system, a 7 mm stone was noted in the lower calyx of the right kidney. With this report, the child reported back to the emergency department. On-duty resident kept the working diagnosis of nephrolithiasis; however, cholecystitis cannot be ruled out and this patient was sent to paediatric surgery. The surgeon requested for MRCP for better delineation of anatomical details and to look for cholangitis. MRCP showed two hyperintense structures in GB fossa with two separate necks (figure 2). Both had separate cystic ducts opening in the CBD (figure 3). Two cystic ducts were seen showing non-union in the entire length and opening separately into the CBD. Thus, duplication of the gall bladder, *vesica fellea duplex*, was confirmed.

DIFFERENTIAL DIAGNOSIS

Gall bladder fold, gall bladder diverticula, Phrygian cap, choledochal cyst, pericholecystic fluid, intraperitoneal fibrotic bands and focal adenomyomatosis are close differentials of the duplex gall bladder. Ultrasonography (USG) alone is not sufficient to differentiate these entities from each other; hence, MRCP is recommended.⁴

OUTCOME AND FOLLOW-UP

Surgery resident decided to admit the patient for laparoscopic cholecystectomy; however, on discussion with a consultant, it was deferred. Clinical profile as well as radiological investigations were in favour of renal colic rather than cholecystitis. The patient was managed conservatively and he became asymptomatic in the next 4–5 days. Currently, the child is asymptomatic and is going to school.

DISCUSSION

The duplex gall bladder is thought to be the result of exuberant budding of the developing biliary tree during the division of the caudal bud of the hepatic diverticulum.⁵ There is no sex predominance, and most cases are found incidentally during cholecystectomy or at autopsy. Anatomical variants of gall bladder duplication are described according to Boyden's classification.⁶ This rare entity holds its utmost importance for the anatomist, radiologist and surgeon.

Awareness among surgeons and radiologists about its anatomy is of crucial importance for a successful outcome, as one moiety may be missed and left behind

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Figure 1 Ultrasound showing two separate gall bladders (GB) lying side by side.

during surgery or major biliary damage with serious consequences may occur during attempted removal.⁷ Case reports have shown that there is an increased risk of cholangitis and a need for second surgery if only one of the two gall bladders is surgically removed, and hence simultaneous removal of both GB should be done in the case of a symptomatic patient.^{4,8} However, in asymptomatic patients, if one gall bladder is normal, there are no reports of increased incidence of pathology in the other.⁹ Also, the risk of having pathology in the duplex is not different from the single gall bladder.¹⁰ Hence, prophylactic removal of the asymptomatic duplex gall bladder is not recommended.

Figure 2 MR cholangiopancreatography showing two hyperintense gall bladders in GB fossa with two separate necks.

Figure 3 MRCP showing two separate openings of cystic ducts into the common bile duct.

Learning points

- ▶ The duplex gall bladder is a rare entity.
- ▶ Ultrasound is not sufficient for anatomical details of the duplex gall bladder; MR cholangiopancreatography should be done before heading for surgery.
- ▶ Simultaneous removal of both gall bladders is recommended in symptomatic cases.
- ▶ Prophylactic removal of the asymptomatic duplex gall bladder is not recommended.

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