Case Report

Congenital isolated in-situ liver malrotation: very rare presentation. case report

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ABSTRACT

Liver anomalies are uncommon. We are reporting a case of 27 years old male admitted as a case of biliary pancreatitis. Upon hospitalization work-up, MRCP was done revealing incidentally in situ liver malrotation which was confirmed intraoperatively. It is very rare anomaly.

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Introduction

Liver is the largest gland in the body exhibiting both endocrine and exocrine properties [1]. Gross liver anomalies are uncommon. Most of them are vascular origin anomalies [2] and accessory fissures [3]. However, the presenting case is a very uncommon presentation of liver anomaly. Only 2 cases are reported in literature with such incidental anomaly. One of them is incidentally discovered during a gallbladder surgery [4]. While, the other case found it during autopsy [5]. However, the presenting case is considered as first case to show this anomaly as a radiological finding.

Case report

A 27-year-old alcoholic male with a surgical history of uneventful laparoscopic gastrectomy sleeve in 2017. Presented to E.R. complaining of right upper quadrant and epigastric pain that radiates to the back and right shoulder for 1 week. It had been associated with multiple episodes of nausea and vomiting of food contents. No fever, change of bowel habits or bleeding per rectum.

Upon physical examination the patient was vitally stable, jaundiced with mild epigastric tenderness and negative Murphy's sign. Complete blood count was within normal limits.
Routine blood chemistry (Table 1) were suggestive of pancreatitis. Then, he was admitted as a case of query biliary pancreatitis. Abdominal ultrasound was performed which revealed normal gallbladder size with multiple few echogenic foci without signs of cholecystitis.

The sonographer reported a difficulty in locating the common bile duct (CBD). However, the intrahepatic bile ducts were not dilated. Then, MRCP was performed (Figs. 1–5) to evaluate the biliary system. It revealed an in-situ malrotation of the liver with the inferior liver surface and the gallbladder facing posteriorly. The liver rotated 90° to the right and 90° inferiorly resulting in anatomical left lobe being inferior to the right lobe with hepatic segment II facing anteriorly. The vascular anatomy relation to the liver segmental anatomy was normal. The main portal vein entered the liver in the porta hepatis inferiorly. The IVC and aorta had normal relationship. There was no evidence of polysplenia or a splenia. The left atrium, cardiac apex, stomach, and spleen were all on the left side and the liver was in right side indicating a normal situs. Gallbladder evaluation revealed multiple stones with signs of chronic cholecystitis. The CBD was normal diameter and insertion to the ampulla. Minimal upper abdominal ascites was seen which is likely related to known interstitial pancreatitis. Findings were communicated to the surgical team. Later, patient underwent laparoscopic cholecystectomy with intraoperative confirmation of in-situ malrotated liver. No procedural difficulty was reported. The patient discharged few days afterwards without complaints and future follow-up appointment was given.

**Table 1 -- Initial relevant labs result upon admission**

| Test          | Result            |
|---------------|-------------------|
| Lipase        | 8,476 unit/L      |
| Direct bilirubin | 7 mg/dL          |

Fig. 1 – Coronal SSFSE T2: of the upper abdomen showing the inferior location of the left hepatic lobe being located inferior to the falciform ligament (white arrow). Normally the left lobe is medial to the falciform ligament.

Fig. 2 – Axial T2 RTr FS propeller: showing posterior location of the gallbladder in relation to the left hepatic lobe. Gallstones are evident.
Fig. 3 – Coronal SSFSE T2: showing the IVC and hepatic veins course. Note the left hepatic vein coursing inferiorly (white arrow).

Fig. 4 – Coronal SSFSE T2: showing the main portal vein in the porta hepatis with superior course of the right portal vein (yellow arrow head) and inferior course of the left portal vein (white arrow). Note: the cardiac apex, spleen and stomach are located on the left side denoting a normal situs.

Discussion

Advanced diagnostic imaging modalities play major role in medical practice. Especially, understanding the normal liver anatomy [6] or variants for treating interventionists, surgeons, and interpreting radiologists.

Liver anomalies are classified into congenital anomalies or acquired morphological changes [7,8]. As well, categorized as anatomic hepatic anomalies, hereditary anomalies, vascular, and biliary systems anomalies. They have been well-described in literature [7,8-20]. The anatomical anomaly of isolated in-situ liver malrotation is not well recognized, since there are only 2 previous similar cases in literature [4,5]. It is mainly characterized by liver is 90° rotated to the right and 90° inferiorly rotated, gallbladder facing posteriorly with normal relation of vascular and biliary systems to liver segments. It is very rare anatomical anomaly. Usually, with similar finding,
it is associated with other anomalies as in condition of situs inversus [21].

This study is considered to be the first radiological exam detecting such anomaly in first place. It is very important for treating physician to be aware of this variant. Consistently, if the patient will undergo a surgical or interventional procedure.

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