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Case Report

An interesting case of duplicated common bile duct and its sequelae

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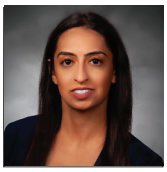

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ABSTRACT

The objective of this case report is to highlight the unusual variant of duplicated common bile duct which has important consequences for future operative planning and subsequent medical surveillance for the patient.

Keywords: Biliary, Congenital Variant, Duplicated common bile duct

INTRODUCTION

Duplication of the common bile duct is considered to be a rare congenital anomaly of the human biliary system. This variant can have important consequences for the patient and therefore must be accounted for in future medical management and operative cases. In this paper we will discuss the sequelae of a patient found to have duplicated common bile duct and also discuss the accepted general classification for this anatomic variant.

CASE REPORT

A 90-year-old with a medical history of hypertension, type 2 diabetes, and diverticulosis presented to the emergency department for acute-on-chronic exacerbation of abdominal pain which had been worsening for the past 24 h. The abdominal pain was described as sharp, left mid abdomen, and periumbilical pain. The patient noted nausea and decreased appetite but no episodes of vomiting. The patient denied changes to bowel movements, bloody stools, or melena. Imaging findings are consistent with duplicated common bile duct with ectopic left biliary drainage into the stomach.

On admission, vitals were stable. Initial laboratories showed AST 61 but otherwise, unremarkable. Physical examination revealed left middle and lower abdominal tenderness. There was no evidence of rebound, guarding, or other peritoneal signs. Physical exam was negative for Murphy's sign or McBurney's point tenderness, and there was no costovertebral angle tenderness. Incidental note of a left inguinal hernia was noted on examination.

Given the clinical presentation, an MRI abdomen w/+ w/o contrast was obtained.

Imaging findings

The CT abdomen without contrast, obtained a month prior, demonstrated focal areas of hypoattenuation near the pancreatic body and body/tail junction. A retrospective review of a

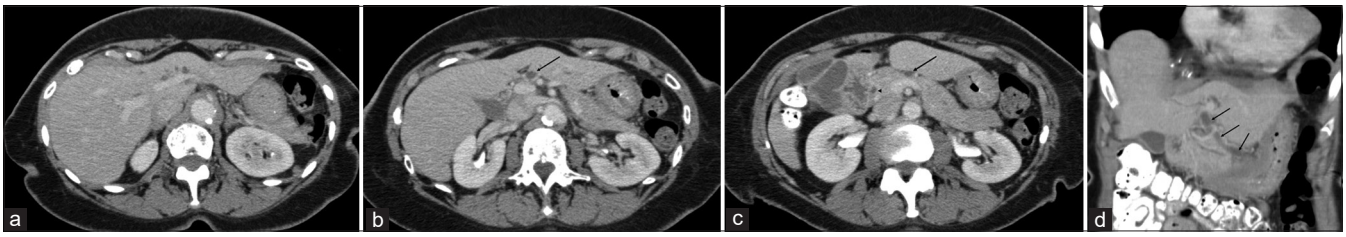

Figure 1: (a) Axial contrast-enhanced CT shows mildly prominent left hepatic bile ducts. (b) The left hepatic ducts converge intro the accessory common bile ducts (arrow). (c) The accessory common bile duct (arrow) is seen conversing over the pancreas, separate from the normal common bile duct (arrowhead). (d) Coronal CT shows the accessory common bile duct coursing along the pancreatic body and tail toward the lesser curvature of the stomach.

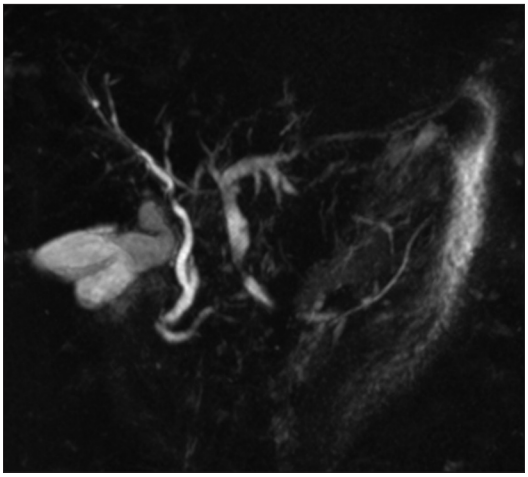

Figure 2: MRCP image confirms the presence of an accessory common bile duct which drains the left hepatic lobe. Duct is seen extending to the lesser curvature of the stomach.

CT abdomen and pelvis with contrast was performed. This revealed separate biliary drainage of the left and right hepatic lobes. The left hepatic biliary ducts appeared mildly dilated and were drained by an accessory common bile duct that traversed along the pancreas and terminated at the lesser curvature of the stomach [Figure 1a-d].

Follow-up MRI with MRCP confirmed aberrant biliary ductal anatomy with duplicated common bile duct with drainage of the left hepatic lobe biliary tree into the lesser curvature of the stomach. There is no apparent connection of the duplicated biliary trees.

Diagnosis

Imaging findings consistent with duplicated common bile duct with ectopic left biliary drainage into the stomach.

DISCUSSION

This case represents a very rare congenital anomaly of the adult human biliary system.[1]

Anatomic variants of the biliary tree are relatively common and have been described by multiple authors. However, complete duplication of the common bile duct (referred to as the accessory common bile duct, ACBD) with ectopic drainage is a rare occurrence and has been sporadically reported. Interestingly, during the time of Galen (129-216 CE) and his teachings, it was assumed there were two common bile ducts draining the liver to the duodenum and the stomach. This was because Galen likely never dissected a human cadaver, but rather, "lower animals" in which this configuration appears normal in some species.[1] In humans, the first actual case report was likely described by the anatomist, Andreas Vesalius, in 1543.[2] Since then, multiple case reports have been published and different classifications of the biliary tree have been described, including, Goor and Ebert (1972)[3] and Saito (1988).[3,4]

The most recent widely used classification is by Choi *et al*. who characterized five different types of duplicated bile ducts with the most common variants being III and IV, with one duct opening into the major duodenal papilla and the ACBD opening into the stomach, duodenum, or pancreatic duct. In addition, type III is further classified as (a) or (b) depending on if they are without or with intrahepatic communicating channels, respectively.[5]

Although rare, recognizing this anomaly, and other more common variants, is important in the preoperative period to help avoid duct injury and because of associated abnormalities, including malignancies. In a review of the Japanese literature by Yamashita *et al*., of the total 47 cases of DCBD, 3 were associated with gastric malignancies, all of which were in cases of drainage into the stomach (16 of the 47 cases).[6] Other malignancies included gallbladder, ampullary, and pancreatic cancers, but these were only associated with drainage into the duodenum or pancreatic duct. Given the ACBD appears to lack a normal sphincter, it is believed that reflux of the bile into the stomach may be the source of carcinogenesis.[7] Other associated abnormalities included cholelithiasis, choledochal cysts, and pancreaticobiliary maljunction.[6]

In our case, the variant anatomy was initially suggested on CT and confirmed by MRCP. If anatomic variants are suspected,

then either MRCP, CT cholangiography, or ERCP are the best options to fully visualize the aberrant biliary anatomy. Given that ERCP is an invasive technique potentially leading to serious complications, MRCP and CT cholangiography are likely the best initial imaging studies.[7,8]

Given our patient's findings on imaging and clinical presentation, general surgery and gastrointestinal team were consulted. In accordance with guidelines as previously discussed, the gastrointestinal team considered evaluation for endoscopic evaluation of gastric mucosa but deferred given the patient's age. Ultimately, the gastroenterology team noted that given the stability overtime, lack of red flags, and patient's older age, no further evaluation was currently needed. General surgery also felt that intervention for duplicated common bile duct was not needed at this time.

CONCLUSION

Based on the classification system set by Choi *et al*., this case demonstrates a Class IIIa duplicated bile duct. Recognizing this anomaly is important in preoperative planning and to avoid any possible associated morbidity and mortality. In addition, these anomalies can be associated with ectopic drainage and chronic reflux. The increased risk of malignancy must be considered and operative planning and subsequent surveillance decided based on the increased risks.[9]

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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