Case 577

Eurorad

Demonstration of pancreas divisum with MR pancreatography in a patient with recurrent upper abdominal pain.

Published on 05.11.2000

DOI: 10.1594/EURORAD/CASE.577
ISSN: 1563-4086
Section: Abdominal imaging
Imaging Technique: MR
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Case Type: Clinical Cases
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Patient: 61 years, female

Clinical History:

A 61 years old female Recurrent upper abdominal pain with nausea and vomiting
Imaging Findings:

A 61 years old female was admitted to hospital with abdominal pain, nausea and vomiting for the last 24 hours. She reported a number of similar episodes during the last decade that were shorter in duration and less severe and were relieved with short amounts of food and anti-acid medication. The patient had a history of surgery (pyloroplasty with vagotomy) for gastric ulcer 35 years ago. Tenderness in the left upper abdominal quadrant and midabdomen was found on physical examination. All laboratory tests were within normal limits. Chest and abdominal radiograph and abdominal ultrasound did not disclose significant abnormalities. A small hiatal hernia, first grade esophagitis and mild inflammation of the duodenal bulb were revealed on endoscopy. Endoscopic Retrograde Cholangiopancreatography (ERCP) was unsuccessful due to anatomic alterations related to the previous surgery. Consequently, abdominal Magnetic Resonance Imaging (MRI) with Magnetic Resonance Cholangiopancreatography (MRCP) was performed. Axial and coronal T1 (fig.1) and T2 MRI sections revealed no abnormalities in the upper abdomen (fig1). MRCP showed a normal common bile duct and a prominent, but normal in diameter pancreatic duct. The duct was seen running along the pancreatic tail and body on projectional views (fig.2A-C). It continued rather horizontally within the pancreatic head crossing the common bile duct and ended in the minor papilla of Santorini, one centimeter above the papilla of Vater. The ventral part of the pancreatic duct was thin, did not show any communication with the dorsal duct and ended in the major papilla.
Discussion:

DISCUSSION Pancreas divisum (PD) is not an uncommon congenital anatomic variant found in 5% of patients undergoing ERCP (2). It is the result of failure of normal fusion of the pancreatic ducts during embryological development (6th -8th week), i.e. of the dorsal (duct of Santorini) and ventral (duct of Wirsung) anlagen .The duct of Santorini then becomes the main excretory pathway of the gland through the minor papilla, while the duct of Wirsung drains only the posterior part of the pancreatic head through the major papilla, where it is joined by the common bile duct. Although patients with PD are usually asymptomatic, this congenital variant has been linked by several authors with recurrent acute pancreatitis, upper abdominal pain of 'unknown' origin and chronic pancreatitis (1,2). The diagnosis is based on ERCP, which demonstrates a short (1-6 cm) and thin pancreatic duct (duct of

Wirsung) draining only part of the pancreatic head and the separate drainage of dorsal and ventral pancreas in the duodenum (3). ERCP was not feasible in our patient and the diagnosis was based on MRCP findings that were consistent with pancreas divisum (PD). MRCP can provide anatomic information concerning dilated and non dilated pancreatic duct segments and may be used as a non-invasive method for the diagnosis of this variation (5). However, large series correlating ERCP with MRCP findings in PD are still lacking. Cross-sectional MR images and MRCP projectional views of the pancreatic duct are of value in excluding other conditions that may be confused with PD. The recurrent upper abdominal pain in patients with PD is attributed to the normally very small ampulla of the duct of Santorini, which drains the majority of the pancreas, creating a functional stenosis of the ampulla and concomitant stasis of pancreatic excretions (4). This was served as an explanation of patient's symptoms in our case too. Appropriate symptomatic treatment consisting of low fat diet, medication of the type of a smooth muscle relaxant and a proton pump inhibitor, was administered to our patient. She was discharged from hospital and remains asymptomatic 18 months after her admission to hospital.

Differential Diagnosis List: Pancreas Divisum

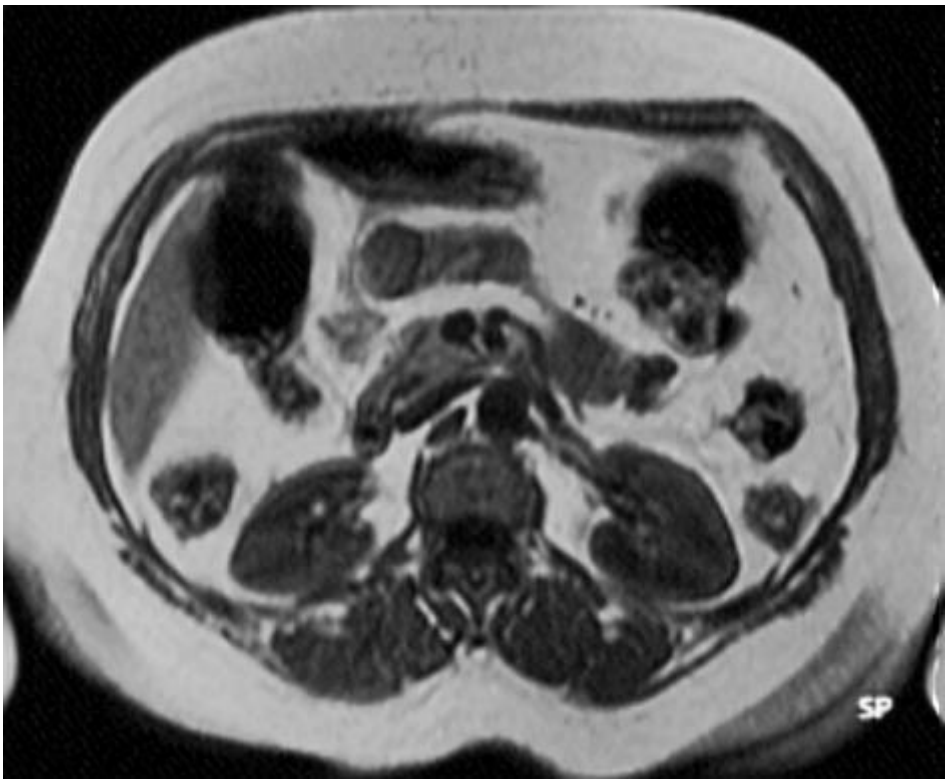
Final Diagnosis: Pancreas Divisum

References:

1.Varshney S, Johnson CD. Pancreas divisum. Int J Pancreatol 1999 Apr;25(2):135-41. (PMID:10360226)
2.Morgan DE, Logan K, Baron TH. Pancreas divisum: implications for diagnostic and therapeutic pancreatography. AJR 1999; 173:193-198. (PMID: 10397125)
3.Eisendrath P, Delhaye M, Matos C, Cremer M, Deviere J. Prevalence and clinical evolution of isolated ventral pancreatitis in alcoholic chronic pancreatitis. Gastrointest Endosc 2000Jan; 51(1): 45-50. (PMID:10625795)
4.Gregg JA. Pancreas divisum: its association with pancreatitis. Am J Surg 1977 Nov; 134(5):539-43. (PMID:920876
)
5.Bret PM, Reinhold C, Taourel P et al. Pancreas divisum: evaluation with MR cholangiopancreatography. Radiology 1996 Apr; 199(1):99-103. (PMID: 8633179)

Figure 1

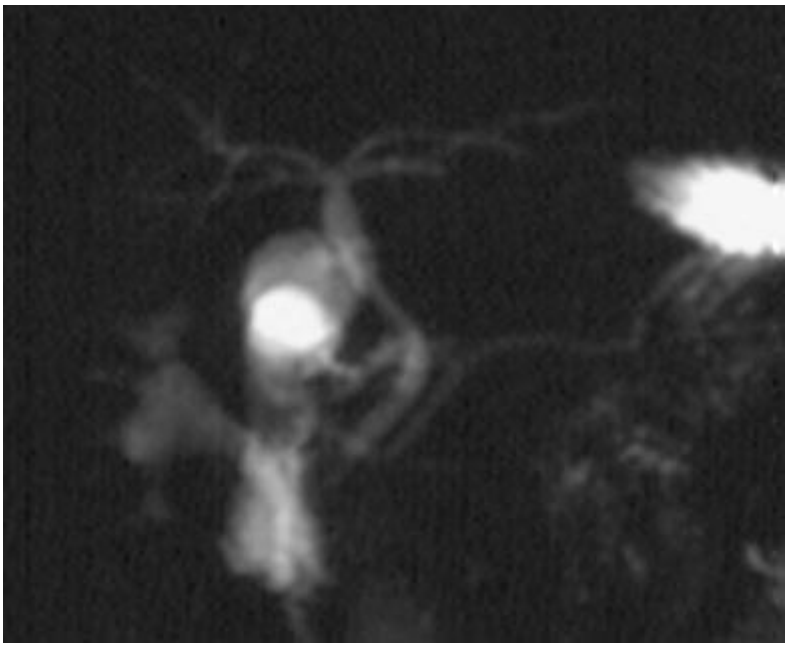
a



Description: Spoiled gradient echo fat suppressed T1-weighted axial MRI section (TR 122/TE 4,8) demonstrating a normal in size and shape pancreatic head. **Origin:**

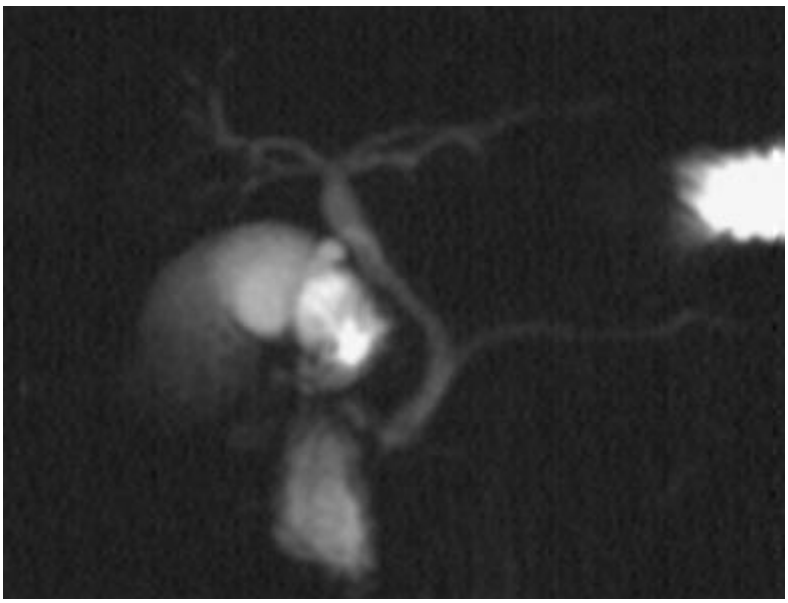
Figure 2

a



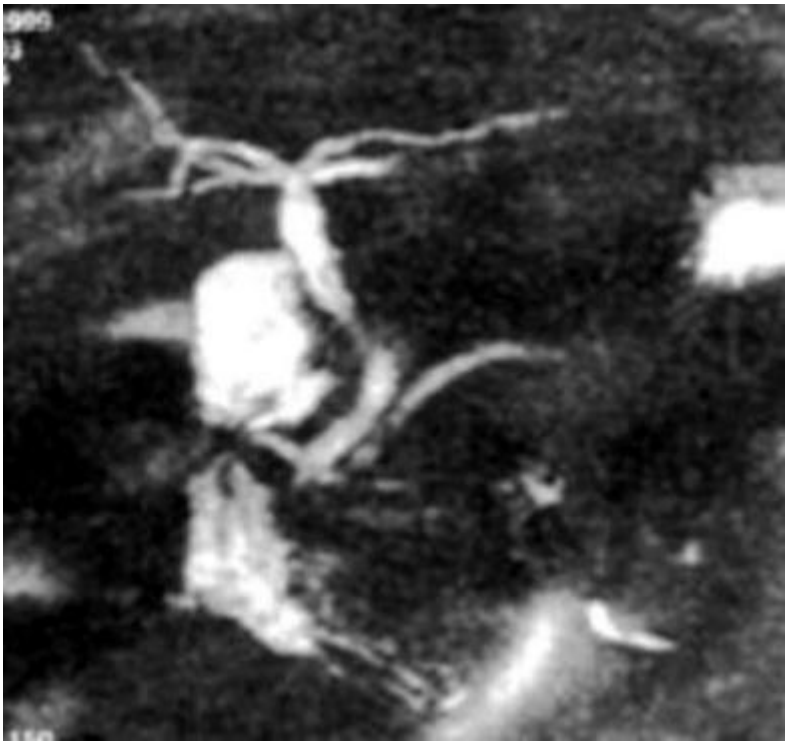
Description: Projectional single shot turbo spin echo MRCP with a 6 cm slab thickness. The pancreatic and common bile duct are crossing over at the head of the pancreas and end in separate points of the duodenum. **Origin:**

b



Description: Projectional single shot turbo spin echo MRCP with a 3 cm slab thickness. 2B is slightly more oblique than 2A.The pancreatic and common bile duct have separate entries into the duodenum. The ventral duct is thin and short and it is barely seen in the head of the pancreas. **Origin:**

c



Description: Maximum Intensity Projection (MIP) reconstruction from multislice HASTE presenting the same findings as in 2a. **Origin:**