Pancreas Divisum: An Infrequent Cause of Acute Pancreatitis

Introduction: Pancreatic divisum (PD) is a condition that develops if the embryonic fusion of the dorsal and the ventral pancreas buds at the gestational age of 6 weeks is incomplete. The failure of fusion between these two pancreatic ducts results in a short and narrow duct in the head of the pancreas that drains through the major papilla (ventral duct) and a much longer duct that drains most of the pancreatic secretions through the minor papilla (dorsal duct). The prevalence of PD has been reported to be approximately 7% to 12.6% in western populations and is the most common congenital pancreatic anatomical variant. On the other hand, it is relatively uncommon in Asia with an estimated incidence of less than 2% in the general population.

Case 1:
Clinical History: A 16 years old female was admitted with findings of acute pancreatitis.

Patient referred for plain 2D / 3D MR Cholangiopancreatography (MRCP).

Imaging Findings:
- Dorsal pancreatic duct was seen to drain into duct of Sartorini and open in to the minor papilla.
- Ventral duct was seen to open along with CBD into the major papilla.
- A small channel was seen connecting these two ducts.
- No ductal dilatation or intraductal calculi were noted.
- Minimal soft tissue stranding of the peripancreatic fat was seen which was also seen to extend along the mesenteric vessels.
- Minimal free fluid was noted in the pelvis.

MRCP: Type 3 PD: Dorsal duct (pink) is seen to open directly into the minor papilla. Ventral duct (yellow) is seen to join CBD(orange) and open into the major papilla. Communicating duct(red) is seen.
Final Diagnosis: Pancreas Divisum (Type 3) with early changes of pancreatitis.

Case 2:
Clinical History:
A 35 year old male with history of repeated attacks of pancreatitis presented with epigastric pain and vomiting. Lab values showed marginally deranged liver enzymes. No h/o alcohol consumption or medication was noted.
Patient referred for plain 2D / 3D MR Cholangiopancreatography (MRCP).

Imaging Findings:
- Dorsal pancreatic duct was seen to be in direct continuity with the duct of Sartorini, which drained into the minor papilla.
- Ventral duct was seen to join with the distal bile duct to enter the major papilla. Mild prominence of the ventral duct was seen.
- No intraductal calculi noted.
- Changes of acute pancreatitis were noted in the head of pancreas with fluid in the peripancreatic fat and around the duodenum.

Final Diagnosis: Pancreas Divisum (Type 1) with early changes of pancreatitis.
**Discussion:**

Pancreas divisum is the most common congenital anomaly of the human pancreas (incidence ranging from 4 to 14%), in which the dorsal and ventral pancreatic glands drain separately into the duodenum. The predominant drainage (body and tail) is performed by the dorsal duct of Santorini through the minor papilla, the head is drained by ventral duct of Wirsung through the major papilla. Pancreas divisum presents in three variants:

- **Type 1 or classical divisum:** there is total failure of fusion.
- **Type 2:** dorsal drainage is dominant in the absence of Wirsung’s duct.
- **Type 3 or incompete divisum:** a small comunicating branch is present.

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.

ERCP is the standard of reference for imaging in pancreaticobiliary system because of its high image resolution and advantage of allowing therapeutic intervention.

In our above two cases 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. 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. This was served as an explanation of patient's symptoms in our case 2 too.

**Message:**

- **MRCP provides a non invasive means of diagnosing pancreas divisum without the use of contrast material.**
- **MRCP also helps in evaluation of pancreatitis and its complications , neoplasm , congenital anomalies,calculus disease and sequelae of trauma.**

Regards,

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N.B: This case is authentic and from the archives of Radiance Diagnostics. For any queries / suggestions/feedback write to us at radiance@radiancediagnostics.in