Annular Pancreas - a rare cause of recurrent pancreatitis

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ABSTRACT

- Annular pancreas is a rare congenital anomaly, can result in acute, chronic, or acute-on-chronic pancreatitis. In half of the cases it is asymptomatic. It can manifest in early neonate as duodenal obstruction or in adult with abdominal pain and vomiting. We reporteda 23-year-old male presented with recurrentepigastric pain since last two years. Computed tomography (CT) and magnetic resonance imaging (MRI) of the abdomen demonstrated mild pancreatitis along with the presence of pancreatic tissue around the descending portion of the duodenum (a characteristic feature of annular pancreas). The Findings on different imaging modalities are described.

Keywords: Computed tomography; Magnetic resonance imaging; Magnetic resonance cholangiopan creaticography

INTRODUCTION

Annular pancreas is characterized by a ring of pancreatic tissue encircling the duodenum, most commonly the descending part of the duodenum[1]. It may manifest during the early neonatal period with duodenal obstruction, but may also remain asymptomatic until adulthood with various presentations including pancreatitis. However, when it is symptomatic, it may manifest as duodenal obstruction, or it may appear later in life when it usually presents with abdominal pain, postprandial fullness, and vomiting, or even peptic/ duodenal ulceration secondary to static duodenal contents. CT scan demonstrates not only the annular pancreatic tissue encircling the duodenum but possibly also dilated duodenum proximal to this stenosis.

CASE REPORT

A 23-year-old male presented with epigastric and left-upper-quadrant abdominal pain. He had multiple previous episodes of similar abdominal pain resulting in hospital admission; this was thought to be as idiopathic pain and conservative treatment taken and pain was subsided. Physical exam revealed a nondistended and soft abdomen with significant tenderness in the epigastrium. Bowel sounds were normal.

- Laboratory results were significant for markedly elevated serum amylase and lipase levels: 532 (normal 31-124 U/L) and 339 (normal 0-59 U/L), respectively.
- The noncontrast CT scan on admission showed duodenum surrounded by tissue that was isodense to the pancreas (Figure 1). The intravenous contrast-enhanced CT scan on admission showed peripancreatic inflammation most prominent around the head and neck, together with hypoattenuation and enlargement of the head consistent with acute pancreatitis (Figure2). The common bile duct (CBD) was seen just posteromedial to the duodenum .MRI of the abdomen at the level of pancreas showed pancreatic tissue surrounding the duodenum (Figure. 3). Magnetic resonance cholangiopancreaticography (MRCP) did not reveal any CBD stones (Figure. 4).
- Complete annular pancreas was diagnosed and planned for Duodeno-jejunostomy without interfering pancreas. Intra operative findings confirmed the presence of ring of pancreatic tissue encircling the 2nd part of the duodenum (Figure.5)

DISCUSSION

Among congenital pancreatic aberrations, it is the second most common after pancreatic divisum[2]. The prevalence varies between 5-15/100,000 adults on a cadaveric case series, to 1 in 250 on an endoscopic retrograde cholangiopancreaticography (ERCP) study 3The prevalence ratio between infants and adults is approximately 0.008% versus 0.005 %, respectively[3,4].

This congenital anomaly is seen twice as commonly in males than in females. Well-recognized associations are described in the literature with other developmental anomalies/syndromes such as Down's syndrome, duodenal atresia, congenital heart disease, imperforate anus, tracheoesophageal defects, and Hirsch sprung disease 1 and 2. In more than half of the cases, annular pancreas does not manifest clinically and can be a purely incidental finding [3]

- Reflux of duodenal contents in the pancreatic ducts due to continuous peristaltic waves in the proximal duodenum can result in acute, chronic, or acute-on-chronic pancreatitis[5].

- Pancreatic development starts in the fifth week in utero with the appearance of two ventral and one dorsal pancreatic buds. During rotation of duodenum the ventral buds fuses with dorsal bud. Interruption in this step may result in a ring of pancreas encircling the duodenum3. Different theories have been presented about the origin of annular pancreas, but it is clear that it is derived from the ventral bud of the developing pancreas [6].
- Annular pancreas is a radiologic diagnosis. CT scan demonstrates not only the annular pancreatic tissue encircling the duodenum but possibly also dilated duodenum proximal to this stenosis. The value of contrast CT is particularly great , as it helps to clearly identify the anatomy by delineating the course of the duodenum. MRCP classically shows the pancreatic tissue/duct entrapping the second portion of duodenum 2. Although a complete ring of pancreatic tissue encircling the duodenum suggests annular pancreas, its absence does not exclude the diagnosis. In fact, Sandrasegaran et al found that more than 37% of patients in their study group had an incomplete annulus of pancreatic tissue around the second portion of duodenum in a jaw-like configuration [3].

CONCLUSION

Annular pancreas is an uncommon congenital anomaly, but it should be considered in patients with repeated bouts of pancreatitis when the common etiologies like gallstones and alcoholism have been ruled out. In adults, it usually presents in the third to fourth decades. Our case demonstrates presentation of annular pancreas due to recurrent pancreatitis in the third decade.

Figure 1. NCCT axial image of annular pancreas. Bulky with inflammatory/edematous changes surrounding the head and neck of the pancreas (arrow).

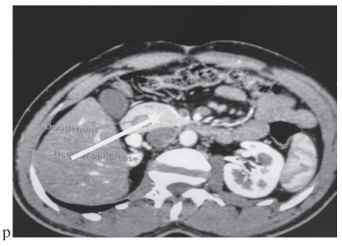

Figure 2. CECT axial image shows alteredattenuation and enlargement of the pancreatic head. Duodenum passing within the head of the pancreas (arrows).

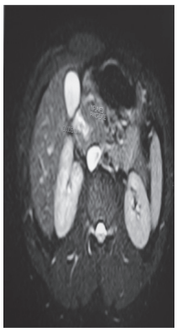

Figure 3. MRI abdomen T2-weighted axial image at the level of pancreas shows pancreatic tissue surrounding the duodenum .

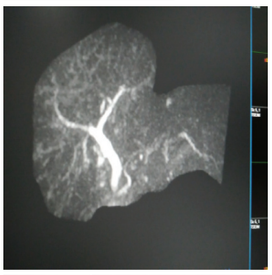

Figure 4. MRCP abdomen image shows normal common bile duct and pancreatic duct.

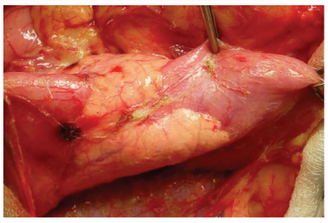

Figure 5. post-operative image showing pancreatic tissue encircling the 2nd part of duodenum.

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