CLINICAL IMAGE

Bifid Tail of the Pancreas with Localized Acute Pancreatitis

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Bifid tail of the pancreas is an extremely rare developmental anomaly, and its clinical importance is not well known. We report the case of a 28-year-old man with acute pancreatitis limited to one side of a bifid tail with no otherwise detectable parenchymal edema on magnetic resonance (MR) imaging. Neither was there evidence of other anatomical ductal abnormalities that could have contributed to the patient’s pancreatitis. To the best of our knowledge, this is the first report to suggest that bifid tail of the pancreas might cause acute pancreatitis.

Keywords: bifid, pancreatitis, anomaly

Introduction

A wide variety of anatomic anomalies can be seen in the pancreas, and bifid tail (pancreas bifi-
dum or fish-tail pancreas) is an extremely rare anomaly of developmental anatomic branching.1 Few reports in the literature describe this variation, and its importance remains questionable.1,2

We describe a patient with acute pancreatitis limited to one side of a bifid tail of the pancreas on computed tomography (CT) and magnetic resonance (MR) imaging with no detectable parenchymal edema on the other side of the bifid tail, pancreatic head, or body. To the best of our knowledge, this is the first report to suggest that bifid tail of the pancreas may cause acute pancreatitis or might increase the predisposition to acute pancreatitis.

Case Presentation

A 28-year-old man was admitted to our hospital because of abdominal fullness and acute epigastric pain that began 18 hours earlier. He reported constant epigastric pain that radiated to his back and consumption of an alcoholic beverage (0.5 liters of beer) the day before admission. He had no previous episodes of pancreatitis, liver disease, diabetes mellitus, or collagen vascular disease. He was a social drinker and had never smoked. His mother had gallstone-induced pancreatitis. His temperature was 37.6°C at the time of hospital admission, and other vital signs were within normal limits. The abdomen was slightly hard with decreased bowel sounds and demonstrated mild tenderness to deep palpation in the epigastrium and slight guarding and rebound tenderness. White cell count was 13,000 per mm3, and serum amylase was elevated to 720 U/liter. The results of other blood count and biochemical tests, including serum cholesterol, were within reference ranges. Abdominal ultrasonography revealed an enlarged pancreatic tail with peripancreatic fluid collection. Coronal multiplanar reformation contrast-enhanced CT and T2-weighted MR images revealed bifurcated pancreas with cranioventral and dorsocaudal buds (Fig. 1A, B). An edematous cranioventral bud caused by inflammation, which was hyperintense relative to the liver on a T2-weighted image, and peripancreatic fluid collection were consistent with acute pancreatitis. On axial T1-weighted MR images with fat suppression, an edematous parenchyma with decreased signal intensity was localized only to the cranioventral bud; no abnormal areas of parenchymal signal were observed in the pancreatic head and body or

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A 28-year-old man with acute pancreatitis in a bifid pancreatic tail. Contrast-enhanced computed tomography with coronal plane reconstruction (A) and magnetic resonance (MR) T2-weighted imaging (B) reveal bifurcated pancreas with dorsocaudal and cranioventral buds. Note that inflammation suggestive of acute pancreatitis is localized only to the cranioventral bud. This is also shown on a fat-suppressed T1-weighted image, that is, the dorsocaudal bud (arrow) is not involved (C), whereas the cranioventral bud (arrowhead) is enlarged and shows low signal intensity that suggests inflammation (D). An MR cholangiopancreatographic image depicts one duct (arrowhead) in the dorsocaudal bud and no apparent duct in the cranioventral bud (E).

Endoscopic ultrasonography (EUS) to search for the cause of pancreatitis showed edematous pancreatic parenchyma, peripancreatic fluid collection, and a single main pancreatic duct (MPD). There was no evidence of what could have contributed to the patient’s pancreatitis, including mass lesions. Conventional treatment with intravenous fluids, urinastatin, nafamostat mesilate, and meropenem under a restriction of oral intake for 8 days improved his condition; the patient was discharged on the 13th day after admission; and he demonstrated no symptoms for 12 months. Follow-up MR imaging 2 months after discharge revealed no evidence of inflammation or tumor in either bud (Fig. 2A, B). MRCP depicted one duct in the dorsocaudal bud (Fig. 2C) and no apparent duct in the cranioventral bud.

Discussion

We describe a patient with acute pancreatitis limited to one side of a bifid tail of the pancreas on MR imaging. Bifid tail of the pancreas is an extremely rare anomaly of developmental anatomic branching. Only a few cases are reported, and we believe its exact frequency has not been reported. There is speculation that both the dorsal and pancreatic elements may be bilobed, which may cause the anomalous bifurcation. The clinical impact is also not well established, although Dinter and colleagues reported that bifid tail anomaly probably does not cause or contribute to abdominal pain or overt pancreatic disease and requires no specific therapy once diagnosed correctly. In our case, CT
and MR imaging revealed bifurcated pancreatic parenchyma with dorsocaudal and cranioventral buds; moreover, localization of acute pancreatitis to only the cranioventral bud suggested the bifurcated bud as a possible underlying cause of the localized pancreatitis. A report describing bifid tail of the pancreas that showed atrophic parenchyma with calcification indicative of chronic pancreatitis localized only to the ventral bud, as in our case,\(^1\) supports our consideration that bifid tail of the pancreas may increase the predisposition to localized acute pancreatitis.

Well known pancreatic ductal abnormalities in the developmental sequence that should be considered in children and adolescents include pancreatic divisum, anomalous pancreaticobiliary junction, and choledochal cysts.\(^1,5,6\) Several reports describe bifurcated MPD, another ductal anomaly that very closely resembles bifid tail of the pancreas. Sahni and associates\(^7\) report that a bifurcated MPD does not always indicate that the pancreatic parenchyma is bifid, and many cases are reported as a single “pseudomass” and not bifid parenchyma.\(^8\) A study of 485 patients investigated with endoscopic retrograde cholangiopancreatography (ERCP) reported 13 patients with MPD bifurcation, so it is not so rare an anomaly as bifid tail of the pancreas.\(^9\) Although bifurcated MPD is reported to be associated with pancreatitis,\(^10\) in our case, MRCP depicted no apparent ductal anomalies, including bifurcated MPD. One duct was visualized in the dorsocaudal bud, but no duct was apparent in the cranioventral duct. We have considered the possibility that the duct in the cranioventral bud is relatively small in diameter and can be vulnerable to obstruction of outflow.

In conclusion, we present a first report of a patient with acute pancreatitis limited to one side of a bifid tail of the pancreas on MR imaging that suggests the bifid tail as a possible cause of the pancreatitis. Bifid tail of the pancreas should be considered an additional cause of localized acute pancreatitis when no anatomical ductal abnormality is apparent on MRCP.

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