Duodenal obstruction from congenital bands: An unusual cause of pancreatitis

JD JUST MD, RJ BAILEY MD FRCP

Acute pancreatitis, while uncommon in children, is not rare. It can be due to a variety of causes including gallstones, trauma, drugs and congenital abnormalities leading to obstruction of the pancreatic duct (1). We present an unusual case of recurrent acute pancreatitis secondary to a congenital anomaly.

CASE PRESENTATION

A 16-year-old female presented to a rural hospital with a 5 h history of nausea and vomiting associated with severe epigastric pain. She was found to have an elevated white blood cell count of 13.8×10^9 cells/L and an elevated amylase of 400 Somogyi units (normal less than 150). Other admission bloodwork including the remainder of the complete blood count, lactate dehydrogenase, aspartate aminotransferase, alkaline phosphatase and bilirubin were all within normal limits. Her symptoms quickly improved with nasogastric suction and intravenous hydration. An intravenous cholangiogram was performed and was normal. The nasogastric tube was removed after two days but symptoms quickly recurred. Her repeat amylase was 740 Somogyi units. The patient was referred to a tertiary centre.

Abdominal ultrasound revealed a normal gallbladder and extrahepatic biliary tree, no evidence of cholelithiasis, and mild edema of the pancreatic head. A gastroscopy showed an acute angle at the second part of her duodenum and the possibility of an annular pancreas was considered. Subsequent endoscopic retrograde cholangiopancreatography (ERCP) was normal. Symptoms improved again and the patient was able to resume oral intake and was discharged home. Three days later she had recurrence of symptoms and was readmitted. Her amylase was 600 Somogyi units and repeat bilirubin and alkaline phosphatase were normal. Serum calcium, cholesterol, triglycerides and gastrin were all normal. Viral studies for mumps and Epstein-Barr virus were negative. Her symptoms resolved with nasogastric suction but recurred one day after she resumed oral intake.

A contrast upper gastrointestinal series was performed and showed duodenal spasm and partial obstruction at the fourth part of the duodenum. She was subsequently taken to the operating room and found to have partial malrotation of the bowel with the cecum in the left upper quadrant and bands obstructing the fourth part of the duodenum. She did not have situs inversus. Five bands were divided, the small bowel...
was placed on the right side of the abdomen, the large bowel
was placed on the left side of the abdomen, and an incidental
appendectomy was performed. She recovered quickly pos-
teratively and was discharged home. She has had no fur-
ther episodes of pancreatitis in the 13 years since surgery.

DISCUSSION
Acute pancreatitis in children has many different under-
lying etiologies. In many series, blunt trauma is the most
common initiating factor (2,3). Pancreatitis is also com-
monly seen as part of multisystem diseases such as Reye
syndrome, shock, hemolytic-uremic syndrome, and viral in-
fecions (4). Children receiving treatment for acute leuko-
emia with steroids and L-asparaginase also make up a large
percentage of the cases of acute pancreatitis in some series
(2,5). Hereditary, pancreatic can also present during child-
hood (6). Most large series also show a significant number of
children with idiopathic pancreatitis for which no underly-
ing cause is found (2-4). However, with more aggressive
investigation including ERCP an underlying cause is more
frequently being identified (7).

Congenital anomalies are being found to be common in
many of these ‘idiopathic’ cases (5). Current reviews have
listed a number of these congenital causes of recurrent pan-
creatitis such as congenital anomalies of the pancreatic
ducts, choledochal cysts, and aberrant gastroduodenal artery
causing ductal obstruction in the head of the pancreas (8,9).
Acute pancreatitis associated with gastric volvulus in a con-
genital diaphragmatic hernia has also been reported (10).

In a review, Stewart and colleagues (11) state that malro-
tation of the bowel can be seen incidentally in 0.2% of
barium studies of the gastrointestinal tract and may remain
asymptomatic. However, most of these patients present be-
fore the age of one month with features of a bowel obstruc-
tion. This obstruction is usually from a small bowel volvulus
around the narrow root of the small bowel mesentery but
occasionally the obstruction is caused by congenital bands.

Typically, bands seen in this disorder cause obstruction of the
second portion of the duodenum (12). Pancreatitis has not
been reported as a presentation of this anomaly in the Eng-
lish literature. However, in the case presented in this article,
there was no volvulus and the obstruction was from abnormal
bands across the fourth part of the duodenum.

Pancreatitis has been reported in adults with afferent loop
syndrome following gastric surgery (13). This is caused by
obstruction of the afferent loop with resulting dilatation of the
duodenum and increased back pressure on the pancreatic and
biliary ductal systems (14). Acute pancreatitis may also be
seen in children with gastrointestinal duplications (15,16).
Both of these causes of pancreatitis involve duodenal ob-
struction beyond the ampulla of Vater. A similar mechanism
has been used to induce experimental pancreatitis in dogs by
tying off the duodenum to create a closed loop obstruction of
the duodenum (17). All of these examples of pancreatitis
appear to have a similar mechanism to what may have oc-
urred in our patient. She had congenital bands obstructing
the fourth part of the duodenum that may have caused a
closed loop obstruction of the duodenum leading to pancrea-
titis.

When a child presents with acute pancreatitis and no
obvious etiology such as trauma, drugs, infection, gallstones,
or systemic disease, a congenital anomaly should be sus-
pected. This is especially true in children with recurrent
acute pancreatitis. Abdominal ultrasound and computed to-
mography will identify most choledochal cysts and gastroin-
testinal duplication cysts. Visualization of pancreatic ductal
anatomy with ERCP is particularly important to rule out
congenital anomalies of the ductal system or other obstruc-
tive causes. We suggest that congenital bands causing du-
odenal obstruction also be considered a potential cause of
pancreatitis in children. A contrast study of the upper gastro-
intestinal tract will identify these cases. With increased iden-
tification of the underlying cause, optimal treatment and
prevention of recurrence can be obtained.

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