Duodenal Diverticulitis in a Child: a rare cause of intramural duodenal hematoma

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ABSTRACT

A 4-year-old girl presented with intermittent abdominal pain and frequent vomiting later with bile contents for 2 days. No history of blunt abdominal injury can be traced. The initial clinical impression was upper gastrointestinal obstruction and a series of examinations were performed including an upper gastrointestinal series, endoscopy and abdominal CT. Because of unimproved condition a week later, surgery was performed with evacuation of the hematoma, which revealed a diverticulum. The pathological diagnosis was diverticulitis. The child recovered uneventfully after the surgery.

CASE REPORT

A 4-year-old girl was transferred to our hospital for abdominal distension, intermittent abdominal pain and frequent vomiting later with bile contents for 2 days. There was no history of blunt abdominal injury can be traced and her vital signs were stable on admission. On physical examination, she was tender in the left upper abdominal quadrant but did not exhibit peritoneal symptoms. Her laboratory data including her coagulation profile were normal. The initial clinical impression was upper gastrointestinal obstruction, and an upper gastrointestinal series was performed (Fig. 1). This showed severe partial obstruction at the fourth portion of the duodenum caused by a well-defined submucosal mass of approximately 5.7 × 2.8 cm with a coiled spring appearance extending to the proximal jejunum. The radiologic differential diagnoses of an acute intramural duodenal hematoma, an intestinal duplication cyst with hemorrhage, intussusception and a submucosal mass were considered. Endoscopy showed erythematous and erosive mucosal change over the third portion of the duodenum with a submucosal mass compressing on the lumen at the junction of the third and fourth portion of the duodenum where the panendoscope cannot advance beyond this point. A CT scan was performed five days later when the retained barium was clear. The CT findings showed a well-defined submucosal cyst-like mass measuring about 7.7 × 5.5 cm, in the fourth portion of duodenum extending to the proximal jejunum with compression on the lumen resulting in partial obstruction and dilatation of the duodenum proximal to the lesion. The cyst-like mass appears as slightly hyperdense.
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(measured about 33 HU) on unenhanced axial CT images, and no obvious contrast enhancement (measured about 34 HU) on enhanced axial CT images is seen (Fig. 2). No abnormal vascular structure, enhancing mass or contrast extravasation was revealed. Based on the CT, the diagnosis of an enteric duplication cyst with spontaneous hemorrhage was made. Because the patient’s condition remained unimproved after a week, laparotomy was performed to evacuate the hematoma and a diverticulum was identified (Fig. 3). Resection of the diverticulum was performed and histopathologic result showed acute and chronic inflammation with granulation tissue formation, hemorrhage and leukocytic infiltration (Fig. 4). No muscular wall was noted at the duodenum. Pathological diagnosis was diverticulitis. After 17 days of hospitalization the patient was discharged with uneventful recovery after surgery.

DISCUSSION

Duodenal diverticula may be congenital, but are more commonly acquired [2]. Congenital or true diverticula are rare and contain all layers of the duodenal wall [3]. Congenital diverticula mostly occur in the second or third portion of the duodenum. The acquired or false type is more common and, like pulsion diverticula elsewhere in the gastrointestinal tract, is formed by protrusion of the mucosa, muscularis mucosa, or submucosa through a focal weakness in the duodenal wall. This is usually near the blood vessels, the pancreatic duct, the common bile duct, or areas of aberrant growth of pancreatic tissue in the duodenal wall [2]. Primary acquired diverticula occur in the second through fourth portions of the duodenum, typically along the medial aspect [4], although 5% arise from the lateral wall of the descending duodenum. Our case occurred in the fourth portion of the duodenum and showed no muscular wall.

Duodenal diverticulitis can be caused by stasis, particularly when the diverticular neck is narrow, and limits efflux of intraluminal contents from the diverticulum to the lumen [5]. Other predisposing factors include the presence of foreign bodies such as gallstones or enteroliths, ulceration within the diverticulum, and blunt trauma are also reported [6]. Our case showed only diverticulitis with no noted evidence of foreign bodies or ulceration. Duodenal diverticulitis is difficult to diagnose because of the lack of specific signs and symptoms, and because it may mimic other more common causes of acute right upper quadrant pain. Approximately 5% of patients with duodenal diverticula develop clinical symptoms. This is most commonly caused by perforation and hemorrhage, with acute diverticulitis being less common cause[4].

Intramural duodenal hematoma could be treated conservative with nasogastric suction and fluid replacement, especially in the presence of clotting defects or with

Figure 1
Upper GI series showed partial obstruction at the fourth portion of duodenum caused by a well-defined filling submucosal mass (arrows).

Figure 2
On enhanced axial CT image showed a well-defined submucosal cyst-like mass (arrow) in the fourth portion of duodenum extending to the proximal jejunum with compression to the lumen.
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only minimal duodenal obstruction. The lesion is most successfully managed by surgical intervention and simple evacuation of the hematoma[1]. In our case there was no history of abdominal trauma and the diagnosis of duodenal diverticulitis was not made until surgery and pathological examination. Our initial impression was a duodenal duplication with spontaneous hematoma resulting in duodenal obstruction. A duodenal duplication or cyst has a mural layer of smooth muscle, which in most cases, connects with the muscular layer of the normal intestinal wall. It is often found on the mesenteric side of the first and second portions of the duodenum, presenting as a cystic lesion [7]. In this case, the diverticulum was not visible on the CT scan, most likely because it was compressed by the large intramural hematoma.

Severe pancreatitis can also cause an intramural hematoma, disrupting the intramural vasculature with the elastase in pancreatic enzymes [8]. There was no such history in our patient.

In conclusion, despite the rarity of its occurrence, acquired duodenal diverticulitis may be considered as one of the causes of non-traumatic intramural hematoma in children which should be treated surgically.

REFERENCES


Figure 3. Surgical findings a. Intramural duodenal hematoma. b. Post evacuation of the hematoma through an incision and a diverticulum was found.

Figure 4. Histopathologic result showed acute and chronic inflammation with granulation tissue formation, hemorrhage and leukocytic infiltration.
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