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CASE REPORT

Intraluminal duodenal diverticulum in a child concomitant with an entrapped coin and a duodenal polyp

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Summary Intraluminal duodenal diverticulum (IDD) is a rare congenital anomaly. We present the report of an 8-year-old girl who had an entrapped coin in an IDD for 3 years that was associated with recurrent pancreatitis. Besides, a duodenoduodenal intussusception was found during the course of investigation and it seemed that a concomitant duodenal polyp contributed to the development of the intussusception. In view of the rarity of each of the aforementioned situations and the improbability of these conditions occurring together, this unusual and possibly unique case is therefore reported here.

1. Introduction

An intraluminal duodenal diverticulum (IDD) is a rare developmental anomaly that is usually asymptomatic. Complications such as intestinal obstruction, hemorrhage, cholangitis, or pancreatitis have been reported in patients with IDD, but these mostly occur only in adult patients.[1] Retention of a coin in the IDD has only been sporadically described.[2] Moreover, duodenoduodenal intussusception is a rare entity because the duodenum is fixed in the retroperitoneum. When encountered, it is usually secondary to a neoplasm that acts as a lead point.[3] The aim of this report is to describe an IDD with a coin entrapped in it for 3 years that caused recurrent pancreatitis in a young girl in whom duodenoduodenal intussusception was possibly caused by a duodenal polyp.

Conflicts of interest: The authors declare that there are no conflicts of interest related to the subject matter or materials discussed in this article.

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2. Case report

An 8-year-old girl had a 1-day history of epigastric pain, nausea, and vomiting. Laboratory test results suggested an acute pancreatitis with elevated white blood count of 18,500/mm^3 (normal value 4000–10,000/mm^3), elevated amylase level of 797 U/L (normal value 28–109 U/L), and elevated lipase level of 1005 U/L (normal value 13–60 U/L). An abdominal radiograph showed a round, metallic foreign body in the upper abdomen. A detailed historical and radiographic review revealed that the metallic object was a coin that was ingested 3 years earlier. The abdominal pain and vomiting subsided promptly after conservative management, and laboratory results returned to normal within 4 days. No attempt was made to deal with the coin retention in this admission and the patient was discharged home with appointment for follow-up. However, 4 weeks later, the patient was re-admitted because of a further bout of pancreatitis (with amylase and lipase levels of 1521 U/L and 3620 U/L, respectively). Abdominal sonography revealed intestinal intussusception that was not reduced by administration of normal saline enema. Initial computed tomography (CT) showed a duodenoduodenal intussusception at the second portion of the duodenum and a fluid-filled lesion situated distally to it (Fig. 1A and B). Because of the presence of an artifact caused by the coin, we could not comment on the exact anatomical and pathological structure of this lesion. At laparoscopy, no extraluminal foreign body or abscess was found and the intussusception resolved spontaneously after general anesthesia administration. Gastroduodenoscopy revealed a pouch-like lesion arising from the wall of the second portion of the duodenum with a coin entrapped inside (Fig. 2A). A 2-cm polypoid lesion was present at the orifice (1 cm in diameter) of the pouch (Fig. 2B). A 5-dollar Taiwan coin (2 cm in diameter and 0.1 cm in thickness) was successfully removed by endoscopy. An upper gastrointestinal series showed a contrast-filled "wind sock" arising in the second portion of the duodenum and extending to the third portion. A peculiar filling defect near the opening of the wind sock also showed a polypoid mass (Fig. 3). A subsequent oral-contrast CT revealed a contrast-filled pouch that was surrounded by a hypodense halo and lying in the duodenal lumen with a polypoid filling defect located at its proximal portion (Fig. 4). Based on these endoscopic and radiological findings, the diagnosis of IDD with a duodenal polyp was made. The diverticulum and the polyp at its base were then surgically removed by performing a longitudinal duodenotomy with careful visualization of the papilla of Vater (Fig. 5). The mucosal defect of the duodenum was repaired with interrupted absorbable stitches and the duodenotomy was closed transversely. Histologic analysis of the specimens confirmed a 2 cm × 1 cm × 1 cm inflammatory polyp and a 7 cm × 4 cm × 3-cm IDD. The postoperative course was uneventful and the patient was healthy at follow-up.

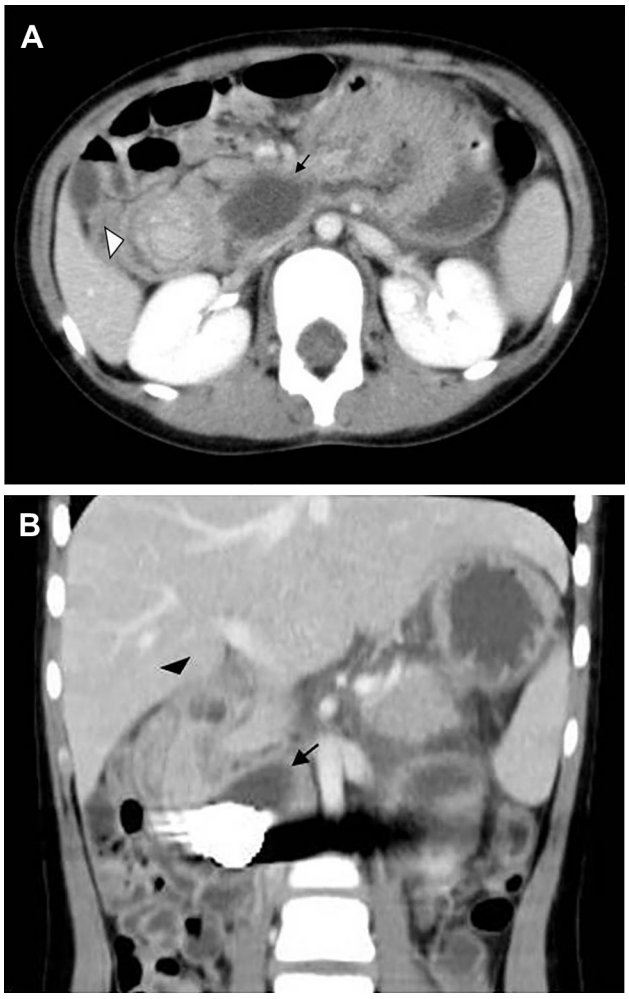

Figure 1 (A) Initial contrast computed tomography (computed tomography dose index 3.86 mGy) showing the "target" appearance in the region of the duodenum, which confirmed the diagnosis of duodenoduodenal intussusception (white arrowhead). The image shows a fluid-filled lesion that appeared to arise from the duodenum (black arrow). (B) Coronal multiplanar reformatted image showing the duodenoduodenal intussusception (arrowhead). The image also shows a fluid-filled lesion with a metallic artifact lying distally to it (black arrow).

3. Discussion

Coins are the most frequently ingested foreign bodies in children.[4] In general, coins smaller than 2.5 cm in diameter will usually pass spontaneously in children in the absence of stenotic lesions or abnormalities in the gastrointestinal tract.[4] The coin in our case was 2 cm in diameter, and therefore could be excreted from the gastrointestinal tract without causing damage. However, it had been entrapped for 3 years at the duodenum because of an IDD, a rare type of duodenal diverticulum. Duodenal diverticula are classified into extraluminal duodenal diverticulum (EDD) and IDD. EDD is acquired and more common. In EDD, a sac of mucosal or submucosal layer herniates through a muscular defect in the duodenal wall. However, the precise mechanism of EDD development is not known yet.[5] In contrast to EDD, IDD is a rare congenital abnormality that has the sac protruding into the duodenal lumen, and thus far only about 150 cases have been described in the literature.[6] During early fetal