Intestinal Obstruction due to Meckel’s Enterolith

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1. Introduction

Meckel’s diverticulum arises from the antimesenteric border of the distal ileum and is the most common congenital anomaly of the gastrointestinal tract. It results from incomplete involution of the omphalomesenteric duct during the fifth to seventh week of gestation, and comprises at least 80% of omphalomesenteric duct remnants. The diverticulum is commonly located 40–60 cm proximal to the ileocecal valve. The usual clinical presentation is digestive hemorrhage, intestinal obstruction and inflammation. We report a case with initial presentation of abdominal pain, nausea and vomiting progressing to intestinal obstruction due to fecaliths of the Meckel’s diverticulum.

2. Case Report

A 9-year-old boy presented with a 2-day history of abdominal pain, accompanied by nausea and vomiting. Physical examination revealed a distended abdomen, decreased bowel sound and diffuse rebound tenderness of the abdomen. Initial plain abdominal film showed local ileus, and multiple dilated bowel loops were visible on the follow-up film a few hours later (Figure 1). Emergent laparotomy was performed under the impression of mechanical ileus. Fecalith formation in a Meckel’s diverticulum about 80 cm proximal to the ileocecal valve was found. The fecalith was milked distally to the cecum, and resection of the diverticulum and appendectomy were performed. Histology of the dissected specimen demonstrated diverticulitis with acute inflammatory cells in the wall, without heterotopic mucosa. Oral feeding was started 1 week postoperatively and was well tolerated thereafter.

3. Discussion

Meckel’s diverticulum is the most common congenital anomaly of the gastrointestinal tract. It represents a remnant of the omphalomesenteric duct, which connects the primitive gut to the yolk sac in early fetal life and is normally obliterated by the seventh to eighth week of gestation. Failure of the...
omphalomesenteric duct to regress may lead to a fibrous band connecting the small intestine to the umbilicus, an omphalomesenteric fistula, an enteroctyst, or a Meckel's diverticulum.

Meckel's diverticulum develops in about 2% of the population. Symptoms resulting from a Meckel's diverticulum occur because of complications, and are more frequent in children than in adults. In children, intermittent and painless bleeding is the most common presentation due to the presence of ectopic mucosa in the diverticulum. The second most common presentation is small bowel obstruction, usually due to volvulus, adhesions, intussusceptions, fibrous bands or internal herniation. Only a few cases of obstruction in adults owing to enterolith formation at the site of the diverticulum have been reported in the literature. The incidence of enteroliths was found to be about 0.3–10% of all cases of Meckel's diverticulum, and this was even lower in children.

The pathogenesis of stone formation in Meckel's diverticulum is unclear. It may be related to stasis resulting from poor coordination of the peristaltic wave at the site of the Meckel's diverticulum. The absence of ectopic gastric mucosa may also lead to a more alkaline environment in the diverticulum, favoring precipitation of calcium and other minerals necessary for enterolith formation. Extrusion of an enterolith into the lumen of the small bowel may cause small bowel obstruction. The mechanism of obstruction may involve local encroachment, or more often, enterolith expulsion with distal bowel obstruction. Acute abdomen due to diverticulitis and perforation is another possible complication.

The clinical manifestations of Meckel's enterolith can be acute intermittent abdominal pain, and/or chronic gastrointestinal blood loss, and acute abdomen due to complications such as diverticulitis and perforation may mimic that of acute appendicitis. Meckel's enterolith is rarely visualized on abdominal radiographs and, when it is detected, must be differentiated from appendicolith. Patients with appendicolith tend to present with acute onset, compared with relatively chronic onset in patients with Meckel's enterolith. Enteraliths within a blind-ended fluid- or gas-filled structure that is continuous with the small bowel may be seen by computerized tomography (CT). High-resolution sonography usually shows a fluid-filled structure in the right lower quadrant, with the appearance of a blind-ended, thick-walled loop of bowel, with a clear connection to a peristaltic small-bowel loop. Enteroliths are visualized as shadowy echogenic foci. Meckel's enteroliths not visible on abdominal radiographs are often also undetected by CT or sonography, although CT and sonography are known to be more sensitive than abdominal radiography for revealing calcifications.

Surgical treatment of Meckel's stone ileus involves en bloc resection of the portion of the small bowel containing the impacted stone, together with the diverticulum, or the stone can be removed by manipulation to the distal bowel or through an enterotomy, if milking fails.

Meckel's enterolith is a rare complication of Meckel's diverticulum. However, extrusion of the enterolith into the bowel lumen may cause obstruction of the small bowel, and warrants immediate surgery. Meckel's enterolith should thus be included in the differential diagnosis of children with acute intestinal obstruction.

References