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Perforation of the sigmoid colon as a result of Meckel's diverticulitis in a child

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Abstract

We report a case of sigmoid perforation caused by Meckel's diverticulitis. The ætiology, clinical findings and guidelines for therapy are described. Complications of Meckel's diverticulum should be considered in the differential diagnosis of young patients with recurrent non-specific abdominal pain. If in doubt, operative exploration should be performed.

Keywords

Meckel's diverticulum; sigmoid perforation; gastrointestinal complication.

Introduction

Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract, with a prevalence of 2%. It was first described by Johann Friedrich Meckel in 1808[1].

The ætiology is assumed to be a developmental disorder of the embryonic omphaloenteric duct during its formation in the seventh week of gestation[2, 3]. Meckel's diverticulum is usually located 40–50 cm proximal to the ileocæcal valve. In 30% of cases, histological examination reveals heterotopic tissues (e.g. gastric mucosa, or pancreatic cells)[2].

(Editor's note: in the pre-metrification UK literature, Meckel's diverticulum was said to occur in 2% of the population, to be 2 inches long and to occur 2 feet from the ileocæcal valve).

The lifetime risk of developing symptoms is estimated to be 4–6%[2, 3]. Presentation as an incidental finding is correspondingly high (44%)[2, 3]. Of the symptomatic cases 80% are diagnosed in the first three decades of life. In addition, the rate of complications decreases with age; typically Meckel's diverticulum is a diagnosis made in the young.

Preoperative diagnosis is difficult because it presents mainly with non-specific clinical signs, and only a few cases can be identified by non-invasive means. Delay in diagnosis causes the typical occurrence of late complications such as diverticulitis (14–47%), obstruction or invagination (28–42%), bleeding (9–38%) or perforation (7–16%); these complications increase the morbidity and mortality[2–4].

We are not aware of any previous description of a perforation of the sigmoid colon secondary to an inflamed Meckel's diverticulum in a child. The severity of this complication underlines the importance of this report.

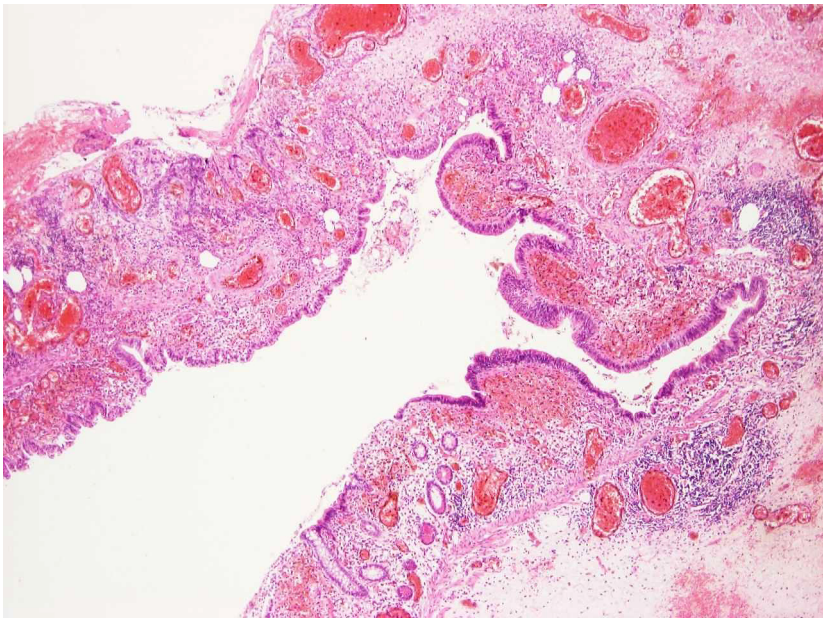

Fig. 1. Meckel's diverticulum showing acute inflammation and hemorrhage (40×, H&E).

Case report

An 11-year-old boy presented with recurrent colicky pain in the lower central abdomen. Symptoms varied over a period of 3 weeks and were accompanied by temperatures of up to 39 °C (102.2 °F). On physical examination, the boy showed palpable resistance in the central lower abdomen accompanied by local tenderness without guarding. There was no leucocytosis. Ultrasound showed a hypoechoic mass in the central lower abdomen measuring 9 cm in diameter. Suspecting an abscess following a perforated appendicitis, we performed an explorative laparotomy via a midline incision. The appendix appeared normal. A perforation of the sigmoid colon about 30 cm above the anus had caused an encapsulated abscess behind the bladder, walled off by loops of ileum. The abscess was removed and after lavage, a resection of the sigmoid colon and the involved ileum was performed. The postoperative course was uncomplicated.

Histopathology confirmed the diagnosis of chronic recurrent inflammation of a Meckel's diverticulum (Fig. 1). The perforation of the sigmoid colon must have been caused by erosion of the inflamed Meckel's diverticulum and had caused the intra-abdominal abscess.

Discussion

The clinical presentation of a Meckel's diverticulum varies widely: abdominal pain in various locations, signs of gastrointestinal bleeding, or symptoms of local peritonitis or gastrointestinal obstruction. Mostly these are non-specific and the differential diagnosis includes a number of possibilities[1–5]. Thus, the exact pre-operative diagnosis of a symptomatic Meckel's diverticulum can only be made in a few cases[3]. As described above, late complications are associated with significant co-morbidity[2–5].

If a diagnosis cannot be made without intervention, then explorative laparotomy is warranted. The intraoperative findings will dictate the operative procedure. Usually, a partial or complete resection of the involved ileal wall is performed. In selected cases, a laparoscopic approach is feasible[5]. Complications such as invagination, torsion, perforation, or infiltration of other organs may make the surgery more complicated[2, 3].

If an asymptomatic Meckel's diverticulum is found incidentally during an operation for other reason there are no standardized recommendations for the operative procedures of choice if any at all. While some authors recommend resection only in young patients[2], others recommend excision in all cases[3].

Our case report demonstrates the difficult pre-operative diagnosis of a symptomatic Meckel's diverticulum. It also underlines the possibility of life-threatening complications in cases of delayed therapy. Therefore, a complicated Meckel's diverticulum has to be part of the differential diagnosis in young patients with recurrent non-specific abdominal pain. If in doubt, an operative exploration

should be performed. We recommend resection of incidentally found Meckel's diverticulum because of the possibility of severe complications.

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