Small Bowel Obstruction due to a Giant Meckel's Diverticulum

Andreas Minh Luu^a Kirsten Meurer^a Torsten Herzog^a Waldemar Uhl^a Andrea Tannapfel^b
Chris Braumann^a

^aDepartment of General and Visceral Surgery, St. Josef-Hospital, Ruhr-University Bochum, Bochum, Germany;

^bInstitute of Pathology, Ruhr-University Bochum, Bochum, Germany

Keywords

Giant Meckel's diverticulum · Small bowel obstruction · Ileus · Acute abdomen

Summary

Background: Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract, with an average length of 3 cm. Complications occur in 6.4% and most commonly include inflammation and gastrointestinal bleeding. Preoperative diagnosis is demanding and achieved in 4%. **Case Report:** A 34-year-old otherwise healthy patient presented with an acute abdomen due to small bowel obstruction. Computed tomography scan could not identify the underlying cause. Emergency laparotomy was performed, and a torqued giant Meckel's diverticulum measuring 17 cm was found as the underlying cause for the small bowel obstruction. Resection of the affected ileum segment and ileo-ileal reconstruction were performed. The postoperative course was uneventful. **Conclusion:** In extremely rare cases, small bowel obstruction in an otherwise healthy patient might be caused by torsion of a symptomatic giant Meckel's diverticulum.

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Introduction

Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract deriving from an incomplete obliteration of the vitelline duct [1]. It is usually asymptomatic and is often found incidentally during surgery. Acute inflammation mimicking acute appendicitis and lower gastrointestinal bleeding are the most common complications of a symptomatic Meckel's diverticulum

[2]. Gangrene secondary to axial torsion of a giant Meckel's diverticulum is seldom [3–5]. Tertiary small bowel obstruction belongs to the rarest but most serious complications [6–9].

We present a rare case of small bowel obstruction due to axial torsion of a giant Meckel's diverticulum.

Case Report

A 34-year-old patient presented to our hospital complaining about increasing generalized abdominal pain, nausea, and vomiting for 5 days. Bowel movements were normal. Both medical and surgical history were unremarkable.

Physical examination revealed diffuse abdominal tenderness on palpation with muscular defense.

Ultrasound demonstrated small bowel obstruction with dilated small bowel loops and non-propulsive peristalsis. Abdominal X-ray ruled out pneumoperitoneum, and computed tomography (CT) scan showed small bowel obstruction in the right lower abdominal quadrant (fig. 1, 2). Laboratory investigations showed: white blood cell count $11 \times 10^9/l$, C-reactive protein 305 mg/l (<5), and creatinine 2.27 mg/dl (0.5–1).

Acute abdomen with small bowel obstruction of unknown etiology indicated emergency laparotomy.

A torqued and gangrenous giant Meckel's diverticulum measuring 17 cm in length was identified as the cause for the small bowel obstruction (fig. 3). After incision of the small intestine, 4 l of small intestine fluid were sucked. Resection of the affected ileum segment 40 cm orally to the ileocecal valve and ileo-ileostomy were performed. The postoperative course was uneventful. The patient was discharged at postoperative day 10.

Pathohistological findings demonstrated a severe inflammation of a Meckel's diverticulum with transmural necroses involving the adjacent small bowel wall (fig. 4).

Discussion

Meckel's diverticulum is a true diverticulum which was first described by Johann Friedrich Meckel in 1809 [10]. It is typically located up to 100 cm away from the ileocecal valve and occurs in 2% of the general population with an average size of 3 cm. Giant

Fig. 1. Abdominal X-ray demonstrating ileus.

Fig. 2. CT scan depicting small bowel obstruction.

Meckel's diverticula are defined as diverticula measuring more than 5 cm [11]. Complications of this anomaly comprise inflammation, obstruction, and bleeding [1, 2, 12]. Small bowel obstruction due to torsion of a giant Meckel's diverticulum is scarce [8, 9]. The lifetime risk for a symptomatic Meckel's diverticulum has been estimated to be as high as 6.4% [13]. Preoperative identification of a Meckel's diverticulum as the cause for an acute abdomen is achieved in 4% [14]. The most common suspected diagnosis in a patient with symptomatic Meckel's diverticulum is acute appendicitis [2]. While ultrasound and CT scan are frequent diagnostic tools, final diagnosis is often achieved during surgery. Ultrasound can be challenging due to bowel gas, and differentiation between small bowel loops and a Meckel's diverticulum is nearly impossible on CT scan [1].

In our extremely rare case, axial torsion of a giant Meckel's diverticulum led to gangrenous small bowel obstruction with acute kidney failure. A surgical approach was pursued to identify the underlying cause of the acute abdomen.

Fig. 3. Specimen of the giant Meckel's diverticulum measuring 17 cm in length. A virtual ruler is placed next to the diverticulum.

Fig. 4. Pathohistological finding of the gangrenous giant Meckel's diverticulum.

Symptomatic giant Meckel's diverticulum is a rare but important differential diagnosis in a patient with small bowel obstruction without surgical history.

Conclusion

Torsion of a giant Meckel's diverticulum is a rare cause of small bowel obstruction and requires emergency surgery. Preoperative diagnosis is a challenge for the surgeon, whereas surgical therapy is quite feasible. Symptomatic Meckel's diverticulum causing an acute abdomen is an important differential diagnosis in patients without surgical history.

Disclosure Statement

The authors declare no conflict of interest.

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