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A case of retroperitoneal abscess: A rare complication of Meckel's diverticulum

Jeana Hong[a], Sung Bae Park[b,*]

[a] Department of Pediatric, Kangwon National University Hospital, Kangwon National University School of Medicine, Chuncheon, Republic of Korea
[b] Department of Surgery, Kangwon National University Hospital, Kangwon National University School of Medicine, 17-1 Hyoja 3Dong, Chuncheon -Si, Kangwong-Do, 200-947, Republic of Korea

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ABSTRACT

INTRODUCTION: The frequent complications of Meckel's diverticulum are hemorrhage, intestinal obstruction, and inflammation, and perforation. The presentation as a retroperitoneal abscess as complications of Meckel's diverticulum is a very rare clinical entity.
PRESENTATION OF CASE: We report a rare case of perforated Meckel's diverticulum with retroperitoneal abscess.

A 31-year-old presented with a half-hour history of severe epigastric pain and diffuse periumbilical pain. Abdominal computed tomography (CT) revealed pneumoperitoneum and retroperitoneal abscesses which air, with diffuse infiltration of the small bowel mesentery and a tubular structure that originated in the ileum at the umbilicus level. Preoperative diagnosis was perforation of Meckel's diverticulum or small bowel perforation. We performed an approximate 10-cm segmental resection of the ileum that contained the Meckel's diverticulum.
DISCUSSION: Retroperitoneal abscesses are rare complications of Meckel's diverticulum and are associated with its perforation.
CONCLUSION: The complications of Meckel's diverticulum should be kept in mind in the differential diagnosis of retroperitoneal abscesses.
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1. Introduction

Meckel's diverticulum is the most common congenital anomaly of the small bowel, occurring in approximately 2% of the population [1]. Most cases of Meckel's diverticulum are asymptomatic, and symptomatic complications develop in only approximately 4% of patients [2]. Preoperative diagnosis of Meckel's diverticulum is difficult because patients may present with non-specific symptoms. Thus, many cases of Meckel's diverticulum are misdiagnosed as acute appendicitis or Crohn's disease. Most cases of Meckel's diverticulum are discovered incidentally during surgery. The complications that have been reported include hemorrhage, intestinal obstruction, inflammation, and perforation [3]. Presentation as a retroperitoneal abscess is a very rare clinical entity.

We report a case of perforation of Meckel's diverticulum manifesting as a retroperitoneal abscess.

The work in this case has been reported in line with the SCARE criteria [4].

2. Presentation of case

A 31-year-old man with no previous abdominal surgery who presented with a half-hour history of severe epigastric pain and diffuse periumbilical pain was admitted to the emergency department of our hospital. The patient's past medical history was not notable except that he experienced intermittent mild lower abdominal pain for three years prior to presentation and was initially treated conservatively. Approximately one hour later, epigastric pain improved, and he complained of only periumbilical pain, nausea and indigestion. A physical examination revealed acute distress. His maximum body temperature was 36.5 °C with a blood pressure of 130/80 mmHg and a heart rate of 82 beats per minute. Normal respiration and oxygen saturation were noted. His abdomen was soft, with normal bowel sounds, no distension, and no palpable mass. He had mild tenderness in his periumbilical area but no rebound or muscle guarding. Laboratory findings revealed a white blood cell count of 12.200/mm^3, hemoglobin 16 g/dL, platelet 227,000/mm^3 and C-reactive protein (CRP) 20.418 mg/dL. The other laboratory investigations, including electrolytes and urinalysis, were within normal limits. Chest and abdominal X-ray revealed no abnormalities. Abdominal computed tomography (CT)

* Corresponding author.
E-mail address: bsb1971_kr@kangwon.ac.kr (S.B. Park).

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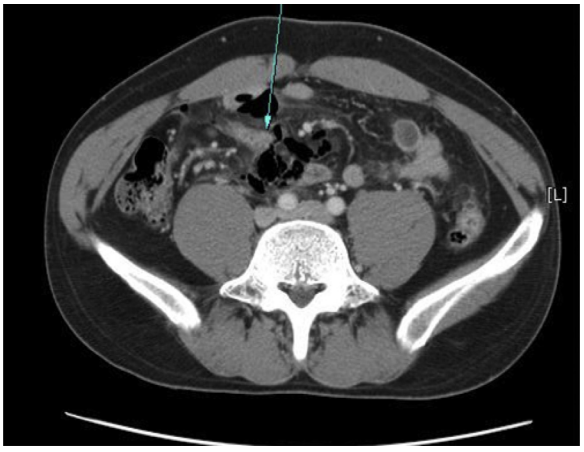

Fig. 1. A computed tomography showed pneumoperitoneum and retroperitoneal abscess which was contain air, with diffuse infiltration of small bowel mesentery and tubular structure (arrow) that was originated in ileum at the level of umbilicus level.

revealed pneumoperitoneum and retroperitoneal abscesses containing air with diffuse infiltration of the small bowel mesentery and a tubular structure that originated in the ileum at the umbilicus level (Fig. 1). The appendix was normal in appearance. Preoperative diagnosis was perforation of Meckel's diverticulum or small bowel perforation and less likely duodenal ulcer perforation.

We performed laparotomy via a midline incision and observed a moderate amount of purulent ascites, which we aspirated for bacterial culture. We observed a Meckel's diverticulum that was 6 cm in length and 40 cm from the terminal ileum. The lesion was connected with an antimesenteric border. The tip of the Meckel's diverticulum was densely adherent to the retroperitoneum, and abscess formation with perforation was noted. The abscess was covered with yellowish fibrous material and composed of a cystic lesion (Fig. 2). We performed an approximate 10-cm segmental resection of the ileum that contained the Meckel's diverticulum. The peritoneal cavity was irrigated thoroughly with normal saline solution, and JP drains were placed in the pelvis. The bacterial culture revealed *Escherichia coli* infection. Histological examination demonstrated Meckel's diverticulum that contained focal antral-type gastric mucosa (Fig. 3). The patient had an uncomplicated postoperative course and was discharged on the seventh postoperative day.

3. Discussion

Meckel's diverticulum is the most common congenital anomaly of the small intestine with a prevalence of approximately 2%. Meckel's diverticulum is a true diverticulum containing all layers of the bowel wall. Meckel's diverticulum is caused by failure of the omphalomesenteric duct to recede during weeks 5–7 of gestation [1]. The average length of a Meckel's diverticulum is 3 cm. Specifically, 90% of cases range between 1 and 10 cm, and the longest was 100 cm. This diverticulum is typically found within 100 cm of the ileocecal valve on the antimesenteric border of the ileum. The mean distance from the ileocecal valve seems to vary with age, and the average distance for children under 2 years of age is 34 cm. For adults, the average distance of the Meckel's diverticulum from the ileocecal valve is 67 cm [2].

Clinical diagnosis of Meckel's diverticulum is rarely possible; less than 10% are diagnosed preoperatively [2]. It is therefore critical for surgeons to exclude Meckel's diverticulum in patients undergoing surgical evaluation for chronic abdominopelvic pain. The correct diagnosis of Meckel's diverticulum before surgery is often difficult because a complicated form of this condition is similar to numerous other abdominal pathologies. Various imaging modalities have been used for diagnosing Meckel's diverticulum. Conventional radiographic examination is of limited value. Despite its limited value, sonography has been used for the investigation of Meckel's diverticulum. High-resolution sonography typically reveals a fluid-filled structure in the right lower quadrant with the appearance of a blind-ending, thick-walled loop of the bowel. On computed tomography (CT), Meckel's diverticulum is difficult to distinguish from normal small bowel in uncomplicated cases. However, blind-ending fluid or a gas-filled structure in continuity with the small bowel may be revealed. Abdomid loop of the bowel. On computed tomography (CT), Meckel's diverticulum is difficult to distinguish from normal small bowel in uncomplicated cases. However, blind-ending fluid or a gas-filled structure in continuity with the small bowel may be revealed. Abdominal CT is used

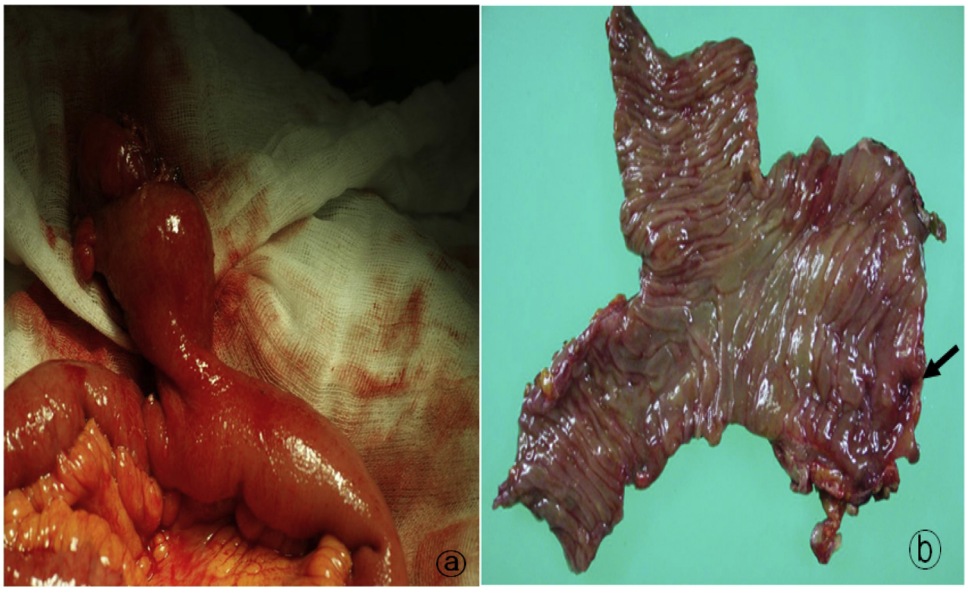

Fig. 2. Gross findings of Meckel's diverticulum: (a) A 6.0 × 5.5 cm sized Meckel's diverticulum located antimesemteric border is seen at 40 cm distal from the ileocecal valve. (b) Specimen of the patient's resected bowel reveals an ulcer as indicated by the arrow.

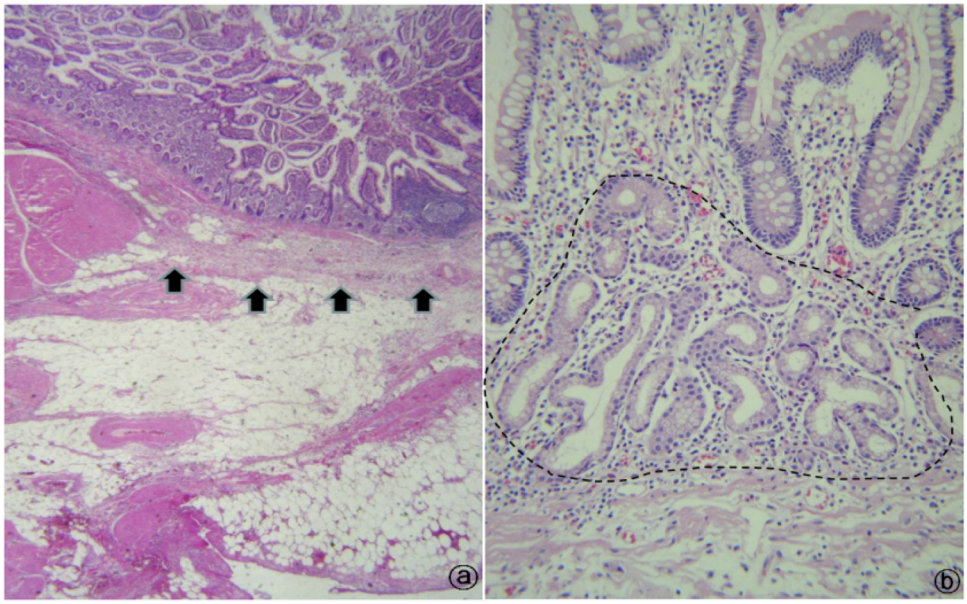

Fig. 3. Histological findings of Meckel's diverticulum: (a) The diverticulum shows partial loss of mucosal lining. (H&E, ×40) (b) Focal antral-type gastric mucosa found in the Meckel's diverticulum. (H&E, ×100).

for complicated cases to confirm the presence of obstruction and inflammation [5].

Most cases of Meckel's diverticulum are asymptomatic. The estimated risk for developing lifetime complications of Meckel's diverticulum is approximately 4% [2].

Frequent complications of Meckel's diverticulum include hemorrhage, intestinal obstruction, inflammation, and perforation [3]. Intestinal obstruction and bleeding are two of the most common complications of Meckel's diverticulum. Perforation of Meckel's diverticulum more commonly results from progressive diverticulitis. Less commonly, foreign bodies have been implicated in its perforation [6].

Most retroperitoneal abscesses originate from a retroperitoneal organ, such as the kidney, duodenum and pancreas [7–9]. Thus, retroperitoneal abscesses are typically reported as pyelonephritis, duodenal ulcer perforation, or severe pancreatitis. In some patients, a delayed diagnosed of retrocecal appendicitis was reported due to the formation of retroperitoneal abscesses as a result of appendix perforation [10]. Retroperitoneal abscesses are rare complications of Meckel's diverticulum and are associated with its perforation.

In our case, the patient's pain migrated from the epigastric region to the periumbilical region, so we made a misdiagnosis of appendicitis. His pain was more definitive at the periumbilical area and not McBurney's point. Abdominal CT revealed that the appendix was normal in appearance, and a retroperitoneal abscess with a tubular structure that originated in the ileum was noted. Thus, a preoperative diagnosis of perforation of Meckel's diverticulum was made. In symptomatic patients, treatment should always include resection of the diverticulum or the segment of the bowel affected by the pathology.

4. Conclusion

Meckel's diverticulum is often difficult to diagnose. Retroperitoneal abscesses are rare complications of Meckel's diverticulum and are associated with its perforation. The complications of Meckel's diverticulum should be kept in mind in the differential diagnosis of retroperitoneal abscesses.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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Ethical approval

We have a consent by the patient. We have not submitted the case to the Ethics Committee approval.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying figures.

Author contribution

Jeana Hong – Data collection, writing the paper
Sung Bae Park – study concept, writing the paper, advised and designed the report

Registration of research studies

N/A.

Guarantor

Sung Bae Park.

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