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Atypical obstructive Meckel's diverticulum in a young patient

Divertículo de Meckel obstrutivo atípico em paciente jovem

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KEYWORDS: Meckel diverticulum. Emergency. General surgery.
PALAVRAS-CHAVE: Divertículo de Meckel. Emergência. Cirurgia Geral.

INTRODUCTION

Meckel's diverticulum (DM) is the most common congenital anomaly of the gastrointestinal tract, with an incidence of approximately 2-4% in the population. Its pathophysiological process consists of incomplete closure or failure in the absorption of the omphalomesenteric duct (yolk), between the 7th and 8th weeks of gestation. Generally, more than half of the cases manifest in childhood or up to 20 years of age, being rare in individuals over 40 years of age.[1-3]

In many situations, DM has no symptoms and is commonly detected incidentally during interventions such as laparotomies, laparoscopies, or necropsies. When any type of complication arises, it can present with a wide variety of clinical manifestations, which should be considered in the differential diagnosis of patients with acute obstructive or inflammatory abdomen. Common symptoms are fever, vomiting, abdominal pain, and blood in the stool — not unique to Meckel's disease.[1,3-5]

The treatment of choice for symptomatic diverticulum is surgical resection. The most common forms are wedge diverticulectomy, or segmental bowel resection, and anastomosis, especially when there is bowel ischemia or obstruction. However, the management of asymptomatic forms requires individualized evaluation, considering the patient's clinical history, the size of the diverticulum, and the risks and benefits of the surgical procedure.[1,4-6]

This report aims to describe an atypical case of a young patient with obstructive DM, relating the discussion to current studies on the same topic. It was approved by the Human Research Ethics Committee of Universidade Positivo, Curitiba, PR, Brazil – CAAE no. 76173623.8.0000.0093

CASE REPORT

A 26-year-old female born in Curitiba, PR, Brazil reported abdominal pain for 8 days, focusing on the epigastric region, of mild intensity, radiating to the back, lasting 1 h and spontaneous improvement. She presented nausea, weakness and inappetence concomitantly, absence of fever and urinary alterations. He had sought another emergency medical care 2 days earlier, where an abdominal computed tomography (CT) scan without contrast was performed, which did not indicate changes in the abdominal region, suggesting normality. The patient began to increase the frequency and worsen the intensity of the pain, and he went to the hospital emergency department 24 h later. On admission, she was in good general condition, lucid, oriented in time and space, afebrile, acyanotic, anicteric, hydrated and normocolored. Regarding vital data, the patient had a BP of 100 x 60 mmHg, a pulse rate of 105 bpm, and a saturation rate of 98%. Abdominal physical examination showed decreased bowel sounds, almost absent, and a slightly distended abdomen, with diffuse pain on palpation, especially in the lower region, with no signs of peritoneal irritation. In addition, a small amount of feces was found in the rectal ampulla when performing the digital rectal examination.

Laboratory tests revealed elevated CRP, rod-shaped cells, and leukocytosis. Abdominal X-rays on admission revealed air-fluid levels in the rectal ampulla, without pneumoperitoneum. Abdominal CT with intravenous contrast revealed small bowel obstruction, with possible adhesions.

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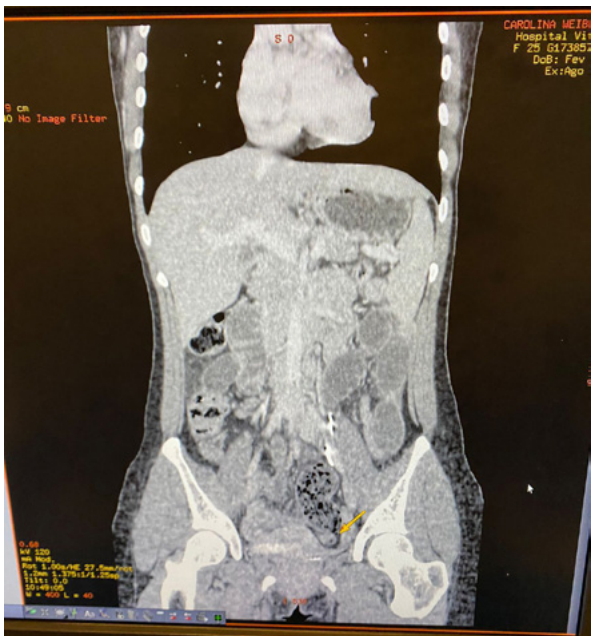

FIGURE 1 — Contrast-enhanced CT scan of the abdomen demonstrating the presence of intestinal obstruction at the level of the small intestine, suggesting possible bridles.

The patient was then submitted to laparoscopy on the same day. During the procedure, distension in small bowel loops was observed upstream of the DM with a wide and engorged base (70 cm from the ileocecal valve) and thinning downstream. The hardened luminal content, which caused the obstruction, was within the diverticulum and expanded into the ileum lumen in the topography of the diverticulum. Therefore, we opted for suprapubic transverse incision laparotomy and segmental enterectomy with removal of the diverticulum area and enteroanastomosis.

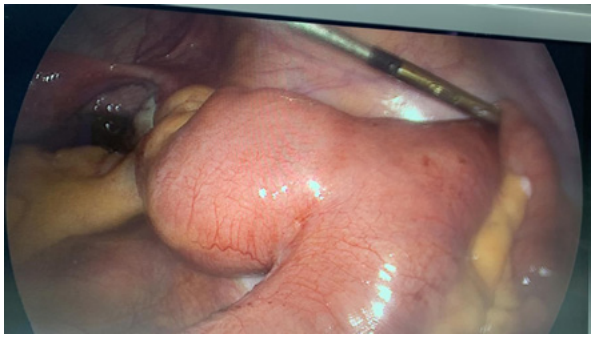

FIGURE 2 — Meckel's diverticulum with contents completely obstructing the ileum

FIGURE 3 — Meckel's diverticulum exposed for segmental enterectomy.

The patient was discharged, in good condition, the day after the operation. He returned on outpatient basis on the 14th day, with good evolution, without manifesting any complications.

DISCUSSION

DM is a condition that predominantly affects pediatric patients and is one of the most common causes of bleeding in this phase, due to the persistence of the proximal portion of the congenital vitile-intestinal duct. It is presented in the form of a pouch and contains the 3 layers of the intestinal wall - which is why it is considered a true diverticulum - located at the antimesenteric border. This congenital anomaly is present in 2% of the population, located 61 cm from the ileocecal junction and is 5 cm long, although there are variations.[5]

DM presents as an asymptomatic condition until any of its complications manifest themselves, usually in diverticula larger than 2 cm, a situation in which the patient usually presents symptoms of obstruction, hemorrhage, or gastrointestinal inflammation.[3] According to the literature, the chance of this anomaly becoming symptomatic throughout life is only 4-6%.[6]

Obstruction occurs in about 36% of symptomatic adults, either due to ileoileal intussusception, invagination, volvulus, stenosis secondary to chronic diverticulitis, internal hernia, Littre's hernia (extension of the hernial sac), inflammatory bridles, or phytobezoar.[6] Internal hernias occur due to the persistence of the fibrotic portion that connects the diverticulum to the umbilicus. Other types of hernia that can eventually become a complication of DM are inguinal, femoral, and umbilical due to intestinal loop entrapment.[2]

Hemorrhage is the most common complication in children under 2 years of age and occurs in the rectum. It is caused by inflammation of the ectopic gastric mucosa, caused by the evolution of the disease to intestinal hemorrhagic ulcer. Inflammation can occur due to DM or perforation of the walls of the diverticula, causing peritonitis.[3] For this reason, the most common symptoms are vomiting, abdominal pain and distension, fever, and blood in the stool.[1,3] Other rarer complications are diverticular fistulization in the bladder and the development of tumors.[4]

The clinical picture of the complications requires tests for investigation, since it is a differential diagnosis of acute inflammatory or obstructive abdomen, such as acute appendicitis.[3,6] Also, when symptomatic, the disease can manifest itself with different intensities, ranging from almost painless and benign conditions to potentially fatal situations, which often require emergency care.[2] For this reason, the identification of the diverticulum is usually incidental during laparotomies and laparoscopies (0.14-4.5 %) or necropsies (0.3-4%).[6] Retrospective studies indicate that this condition is most frequently observed in the right abdomen, accounting for 67% of cases, with the majority located at the level of the umbilicus (37.5%), followed by the upper and lower right quadrants (17-12.5%).[2]

Despite advances in imaging and technology, the

clinical diagnosis of symptomatic or complicated DM is still challenging, often confirmed only during laparotomic or laparoscopic exploratory surgical procedures.[6]

Diagnosis is usually based on the association of clinical suspicion with imaging tests. However, these tests may not have adequate sensitivity and specificity, making a surgical approach necessary for confirmation.[4]

Several methods of complementary tests are cited in the literature, such as abdominal radiography, contrast-enhanced examination of the small intestine, computed tomography, ultrasonography, arteriography, technetium 99 pertechnetate scintigraphy and capsule endoscopy. However, most of these tests tend to reveal only alterations resulting from complications and have limited sensitivity and specificity.[3,6]

Direct observation of the diverticulum is essential for accurate diagnosis. It can be performed through operations or through endoscopy of the small intestine, such as double balloon endoscopy, which allows the endoscope to advance deeper into the ileum until the diverticulum is identified.[3]

Early recognition when complicated is crucial, as a delay in the surgical approach, especially after 36 h in cases of strangulation, can lead to significant morbidity and mortality rates of up to 25%.[1] The definitive symptomatic treatment is surgical resection, which can be performed by laparotomy — still the most common access route — or by laparoscopy. These procedures allow the resection of the diverticulum using 1-3 trocars, either by intraperitoneal resection or exteriorization of the intestinal segment containing the diverticulum.[3]

The choice of surgical procedure, such as diverticulectomy, wedge resection, or segmental resection, depends on the height-to-diameter ratio of the diverticulum (considered long when this ratio is greater than 2) and the type of complication presented.[1] Diverticulectomy is indicated for incidental, long diverticula, or in cases of diverticulitis at the tip of the diverticulum, while segmental resection is recommended when the base of the diverticulum is inflamed, in short diverticula, or in situations of melena, intestinal ischemia, or perforation.[5] The extent of resection should be guided by the type of complication and intraoperative findings, such as bleeding, presence of ectopic tissue, necrosis, perforation, peridiverticular abscess, or suspected neoplasia.[6]

As a final message, DM may present not only inflammatory but also obstructive complications, resulting in partial or total occlusion of the ileum. This clinical picture makes diagnosis difficult, due to the wide spectrum of diseases that must be considered in these circumstances and the atypical age for the development of this anomaly. Therefore, surgeons who treat patients with acute abdominal pain should be aware of this possibility since it may be a medical emergency.

Authors' Contributions

Ana Júlia Ribas Sigwalt: Formal Analysis, Research, Writing (original draft)
Cecília Schneider: Formal Analysis, Methodology
Gabriella Micheten Dias: Formal Analysis, Methodology
Isabelle Tomelin Rothenburg: Writing (revision and editing)
Marjorie Secatto Batista: Conceptualization
Marcos Fabiano Sigwalt: Conceptualization

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