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Case Report

Meckel's diverticulum presenting with intestinal occlusion due to internal hernia

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ABSTRACT

Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal system. Its incidence is approximately 0.3% to 3% of the population. It is located between 30 and 150 cm from the ileocecal valve. Up to 4% present with complications such as haemorrhage, diverticulitis, perforation, and intestinal obstruction. Clinical record of a patient admitted to the emergency room of an IMSS hospital in Ciudad Juárez, including clinical symptoms, imaging, surgical management and pathological anatomy. Patient presented to the emergency room with a clinical and imaging picture of intestinal obstruction. An exploratory laparotomy was performed, finding an internal hernia secondary to adhesions generated between a Meckel's diverticulum to the right mesocolon. Meckel's diverticulitis is a differential diagnosis to consider in young patients presenting with intestinal obstruction, since its early treatment reduces morbidity.

Keywords: Meckel's diverticulum, Intestinal obstruction, Internal hernia, Abdominal pain, Images

INTRODUCTION

Meckel's diverticulum is the most common malformation of the digestive tract. During the fifth to seventh weeks of embryonic development, the yolk duct degenerates and becomes atretic, becoming a ligament. Any abnormality during this process can lead to the development of Meckel's diverticulum.[1-4] It occurs in around 0.3 to 3% of the population, with similar rates in men and women. It is usually found in the small intestine at a distance of 30 cm to 150 cm from the ileocecal region. About 4% of patients with this malformation develop complications including gastrointestinal bleeding, diverticulitis, perforation, and intestinal obstruction.[1]

Repeated inflammation can lead to the formation of adhesion bands between the diverticulum and the abdominal wall/mesentery, causing an adhesive obstruction.[1,5] Occurrence of internal hernia and intestinal gangrene due to Meckel's diverticulum is rare. Therefore, in young and middle-aged patients without previous abdominal surgery, if acute intestinal obstruction is present, internal hernia and Meckel's diverticulum should be included in differential diagnosis.[1,6]

CASE REPORT

Clinical case of a 24-year-old male patient with no surgical history. He attends to emergency department due to emesis on repeated occasions and oral intolerance accompanied by abdominal pain and distension, also referring constipation of 4 days of evolution.

On admission, abdominal radiography with air-fluid levels and data of distal intestinal dilatation with a sign of stacked coins (Figure 1). His laboratories on admission

showed no hydroelectrolytic changes or leukocytosis: haemoglobin15.5g/dL, leucocytes $10.7x10^9$/L, neutrophils 71.4%, platelets $322x10^3$/µl, creatinine 1 mg/dL, glucose 107 mg/dL, potassium 3.52 mEq/L, sodium 132 mEq/L, chlorine 75 mEq/L.

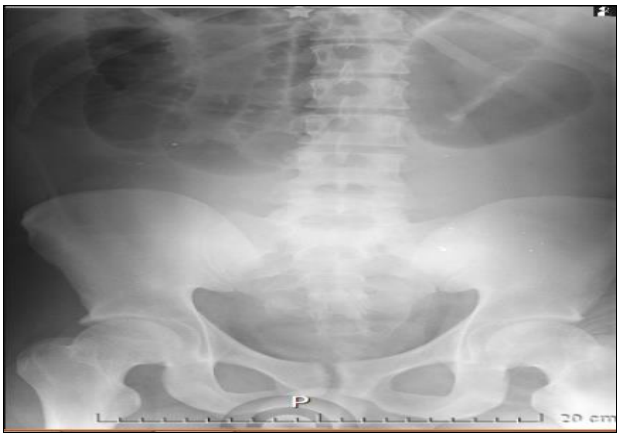

Figure 1: Anteroposterior abdominal X-ray with the presence of dilated small bowel as well as air inside the intestinal lumen.

Within the first 12 hours, conservative management was given with placement of a nasogastric tube and fluid resuscitation with a torpid evolution. After 12 hours of evolution, diaphoresis began along with increased pain intensity, generalized, accompanied by significant abdominal distension, metallic noises on auscultation, and generalized tympany. It was decided to be admitted to the emergency operating room due to acute abdominal symptoms secondary to probable intestinal occlusion.

An exploratory laparotomy was performed, finding a 9×2×2.5 cm Meckel's diverticulum 30 cm from the ileocecal valve, erythematous, adhered by means of a mesenteric diverticulum flange to the distal third of the right mesocolon, favoring a ring for internal herniation of the small bowel loop (Figure 2 and 3).

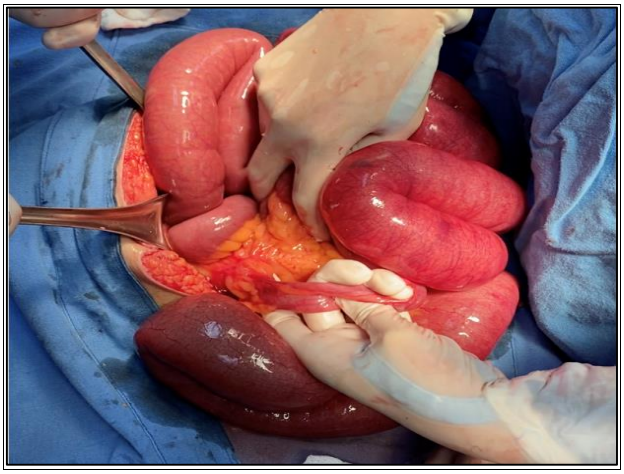

Figure 2: Intraoperative mesodiverticular band finding.

Figure 3: Meckel's diverticulum with dimensions of 9x2x2.5 cm.

Approximately 20 cm, which was dilated and ischemic, adherenciolysis and subsequent resection of Meckel's diverticulum and 12 cm of affected intestine were performed, with end-to-end ileum anastomosis, and subsequent closure of the abdominal wall in layers (Figure 4).

Figure 4: Resection with end-to-end anastomosis is performed.

The piece was sent to pathology, finding acinar-like elements made up of pyramidal cells with granular cytoplasm and cuboidal epithelium ducts.

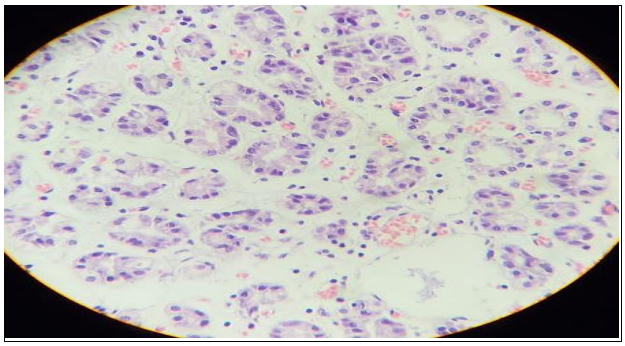

Figure 5: HE 10x, histological section of acinar-like elements made up of pyramidal cells with granular cytoplasm and cuboidal epithelium ducts.

During his stay on the hospital, antibiotic therapy was administered in a single scheme and analgesia. On the second post-surgical day, he presented effective peristalsis, for which a liquid diet was started, which progressed without any complications in the following two days. The patient was discharged from the hospital due to improvement on the fourth post-surgical day. The patient is evaluated again 30 days after discharge with evident clinical improvement, asymptomatic, without post-surgical complications.

DISCUSSION

Meckel's diverticulum was first described by Fabricius Hildanus in 1598, in Germany. A failure of the omphalomesenteric duct to obliterate inutero results in the apparition of this entity.[7]

In adults, intestinal obstruction is the most frequent clinical presentation due to intussusception or intestinal volvulus, and sometimes a meso-diverticular band may present, causing decreased blood flow, diverticulitis, diverticular torsion, littre's hernia, Meckel's diverticulum lithiasis, and the extension of a band between the diverticulum and the base of the mesentery, the latter causing the formation of a loop where the ileum can become trapped and cause an obstruction.[1]

The “rule of two’s” may be used to describe the anatomic and epidemiologic characteristics of Meckel’s diverticulum: two feet from the ileocecal valve, twice as common in males than females, found in 2% of the population and an heterotopic mucosa with up to two types being gastric and pancreatic. Very low lifetime complication rates are associated with asymptomatic MD at approximately 6%, with about 3% of these patients requiring an operation.[8]

In our patient, the manifestations were characteristic of intestinal obstruction, with an internal hernia as the main clinical suspicion, which occurs in 6% of patients with intestinal obstruction, having a broad spectrum as differential diagnoses. For this reason, the surgical intervention of the patient was decided, in which a 9×2×2.5 cm Meckel's diverticulum was located 30 cm from the ileocecal valve, which presented a band between the diverticulum and the base of the mesentery, resection was performed. and end-to-end anastomosis.

CONCLUSION

Despite being a rare entity, Meckel’s diverticulum an important cause of intestinal obstruction in adults, however, there are various pathologies that also cause intestinal obstructive symptoms, such as: paraduodenal hernias, acute appendicitis, obturator hernia, mesentery defects, adhesions of mesentery and omentum. Because of this, it represents a diagnostic challenge for the surgeon, since most diagnoses are made during surgery, despite imaging studies such as computed tomography. Because of this, it is important to search for other signs and symptoms that characterize Meckel’s diverticulum such as gastrointestinal bleeding or diverticulitis which may present along with an intestinal obstruction in order to suspect this entity.

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REFERENCES

1. Zhang Y, Guo Y, Sun Y, Xu Y. An internal hernia caused by Meckel’s diverticulum: a case report. BMC Gastroenterol. 2020;20(1):69.
2. Sapalidis K, Sevva C, Magra V, Manaki V, Koulouris C, Roulia P, et al. Internal hernia and volvulus in an adult male caused by Meckel’s diverticulum: A case report. Medicina (Kaunas). 2021;57(5):443.
3. Sandoval López JC, Beyuma-Mora HE, Labastida-Ramírez DL. Internal Hernia due to Meckel’s Diverticulum: A Rare Cause of Intestinal Obstruction. Rev Fac Med (Méx). 2022;65(2):26-9.
4. Pessanha I, Scuglia M, Correia-Pinto J, Lamas-Pinheiro R. Meckel’s mesodiverticular band causing an internal hernia. J Pediatr Surg Case Rep. 2020;59(101526):101526.
5. Henry R, Tam B, Biswas S. Meckel’s diverticulum causing an interloop adhesion and bowel obstruction from an internal hernia. Am Surg. 2020;3134820979791.
6. Hansen CC, Søreide K. Systematic review of epidemiology, presentation, and management of Meckel’s diverticulum in the 21st century. Medicine (Baltimore). 2018;97(35):e12154.
7. Hui VW, Tsai J, Gokarn N, Statter MB. Internal hernia associated with perforated Meckel’s diverticulum. J Pediatr Surg Case Rep. 2016;4:52-3.
8. Zani A, Eaton S, Rees CM, Pierro A. Incidentally detected Meckel diverticulum: to resect or not to resect? Ann Surg. 2008;247(2):276-81.

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