

Hemorrhagic Shock as the Initial Presentation of a Meckel's Diverticulum

Camila Haro, Alexandra Duffau, Nicolás Muniz, Sofía Mansilla,
Manuel Sanguinetti, Marcelo Viola

Departamento de Cirugía Médica Uruguaya (MUCAM). Montevideo, Uruguay.

ABSTRACT

Meckel's diverticulum is a common congenital anomaly, usually asymptomatic, although it can lead to serious complications. The presence of heterotopic gastric or pancreatic mucosa in the diverticulum favors its ulceration and can cause gastrointestinal bleeding. We present a 34-year-old man who consulted in the emergency room for abdominal pain, enterorrhagia, and anemia (Hb 7.9 g / dl). Subsequently, he developed a massive hemorrhage with hypovolemic shock. Arteriography showed an irregular and tortuous artery dependent on the superior mesenteric artery that was treated with embolization. Laparoscopy was performed at 48h due to recurrence of abdominal pain, which revealed a Meckel's diverticulum with signs of ischemia, which was excised with good outcome. Gastrointestinal bleeding originating from a Meckel's diverticulum is rare in adults. If the patient presents hemodynamic instability, the study of choice is CT angiography. Angioembolization can be used as a bridge to surgery, allowing the patient to hemodynamically stabilize.

Keywords: Meckel's diverticulum; Gastrointestinal bleeding; Angioembolization

INTRODUCTION

Meckel's diverticulum is a common congenital anomaly that results from incomplete atrophy of the yolk duct during embryonic development.¹ It is a blind cul-de-sac located on the antimesenteric border of the ileum, at the level of the terminal branch of the superior mesenteric artery.²

Most do not cause symptoms or complications during life, but can be a source of serious complications.^{1,2} Occasionally, ectopic mucosa develops in the diverticulum, generally of the gastric type, and to a lesser extent pancreatic, duodenal, colonic, endometrial or hepatobiliary.²

In diverticula with heterotopic gastric mucosa, there is acid secretion, which favors local ulceration and the appearance of bleeding complications. In those with pancreatic mucosa, alkaline secretion can produce this same complication.²

Although bleeding is a common complication of Meckel's diverticulum in children, in adults it is not usually considered among the main etiologies of lower gastrointestinal bleeding.

Our objective is to report an atypical presentation of Meckel's diverticulum in adults, which caused lower gastrointestinal bleeding with hemorrhagic shock.

CASE REPORT

We present a 34-year-old patient, with no relevant medical history, who consulted in the emergency room for diffuse 72-hour colicky abdominal pain and hematochezia with stool mixed with fresh clots. This is associated with an anemic functional syndrome. On admission physical examination, he presented mucous paleness, tachycardia of 100 BPM, normal blood pressure, and pain in the lower abdomen, without guarding. The laboratory highlights anemia with Hb 7.9 g / dl. Computed tomography (CT) shows a small bowel distended loop with a thickened wall at the hypogastric level, which seems to correspond to the distal ileum, associated with a minimal alteration of the fat in the pelvis. There are no lesions in the colon. There is no free fluid or pneumoperitoneum (Fig. 1).

Hydroelectrolyte and blood replacement was started, transfusing two volumes of red blood cells. Subsequently, the patient is referred to the ward to complete the evaluation. In the first hours after admission, he presents a new episode of massive gastrointestinal bleeding with hemorrhagic shock that improves with the initial resuscitation measures. It was decided to request arteriography of the mesenteric vessels with eventual angioembolization. During the procedure, a tortuous irregular artery dependent on the superior mesenteric artery located immediately above the bladder was identified, with spontaneous contrast extravasation and its passage to a loop of the small intestine (Fig. 2). The

The authors declare the absence of conflicts of interest.

Camila Haro

harob.camila@gmail.com

Received: October 2020. **Accepted:** November 2020.

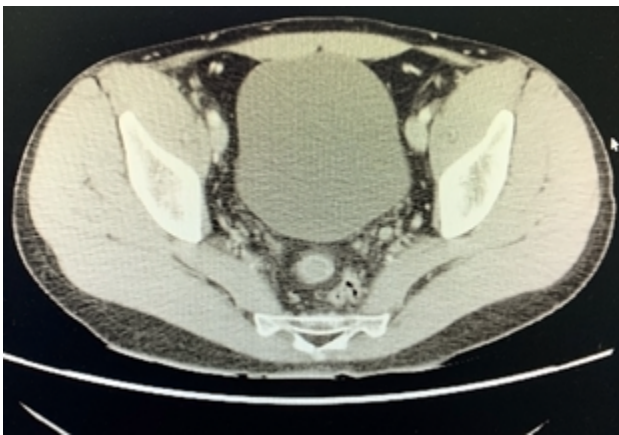


Figure 1: CT of the abdomen showing a small bowel loop with thickened walls in the pelvis and alteration of the adjacent fat.

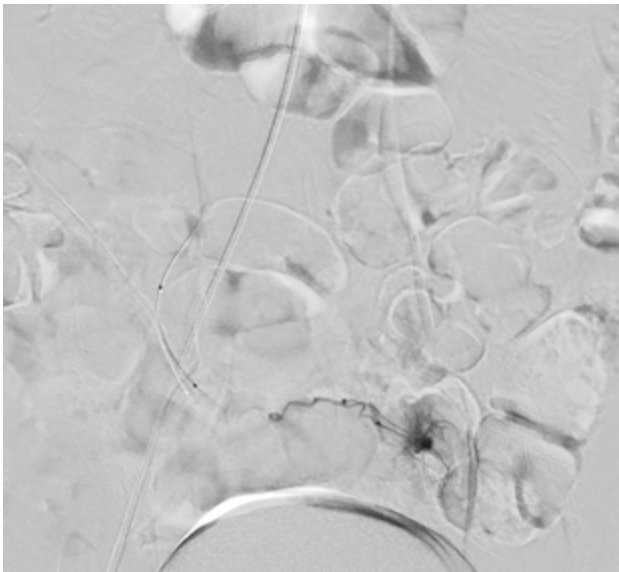


Figure 2: Arteriography showing contrast extravasation.

bleeding artery is accessed through an Echelon 10 microcatheter on a Traxcess 14 microguide and embolized with Histoacryl 30%, achieving its occlusion with cessation of bleeding. The patient had a good initial evolution, with no evidence of rebleeding. At 48 hours he repeated hypogastric abdominal pain and guard. Faced with the idea of possible ischemia of the small bowel loop, it was decided to perform a diagnostic laparoscopy, which revealed little fibrinopurulent exudate in the pelvis and a Meckel diverticulum totally compromised with parietal ischemia. (Fig. 3). With the decision to excise it to the base, a conversion to a medial infraumbilical minilaparotomy was performed. The diverticulum was exteriorized and a wedge resection with hand-sewn end-to-end anastomosis with 4-0 Vicryl was performed, preserving the mesenteric spur of the small intestine.

The patient evolved favorably in the postoperative period and was discharged on the fourth day.

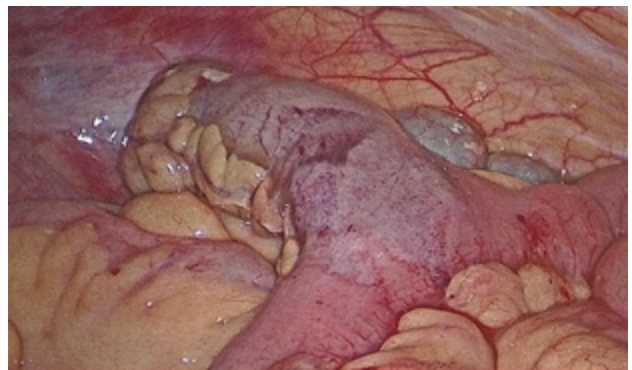


Figure 3: Laparoscopic view of Meckel's diverticulum.

DISCUSSION

Lower gastrointestinal bleeding is a diagnostic and therapeutic problem in emergencies. There is controversy about the initial management of these patients, depending mainly on the hemodynamic status at admission.³

In hemodynamically stable patients, the diagnostic procedure of choice is colonoscopy, with prior preparation of the colon to improve visibility and reduce the risk of perforation.³ In unstable patients, British guidelines recommend initial CT angiography, with eventual angioembolization of the bleeding vessel and delayed lower gastrointestinal endoscopy to evaluate the lesion.⁴ The advantage of CT angiography is the ability to visualize bleeding from the small intestine, so it is the choice if this topography is suspected.

Between 5-10% of lower digestive hemorrhages correspond to the small intestine. The most frequent causes vary according to the age of the patient. In those under 40 years of age they are inflammatory bowel disease and Meckel's diverticulum.

Angiography is an effective method to study and treat these bleeds, with a success rate that varies between 40% and 100% in the literature.⁴ Some of the complications of angiographic embolization are rebleeding and intestinal ischemia, so patients should be closely monitored in the first days after the procedure.⁴

In cases of Meckel's diverticulum with active bleeding, arteriography allows detecting its origin, visualizing the vestige of the omphalomesenteric artery. Technetium 99 scintigraphy is used for diagnosis in children, but in adults it has lower sensitivity, as well as limited availability, so it is not the study of first choice.⁵

In the case of active bleeding, angioembolization has been described, with or without posterior resection of the diverticulum.⁵ In cases of hemodynamic instability, angioembolization can be used as bridging therapy, delaying definitive treatment and allowing the patient to be stabilized before surgery. In this way, a laparoscopic sur-

gical treatment can be considered, with its well-known advantages.⁵ Resecting treatment of the diverticulum is the subject of discussion, with the options of resection and segmental anastomosis of the small intestine, wedge resection, or tangential stapling.¹

CONCLUSIONS

The case of a young patient, with massive lower gastrointestinal bleeding due to a complicated Meckel's diverti-

culum is presented. Initially, hHe was treated by angio-embolization and later required resection due to local ischemia.

We emphasize the importance of diagnostic and therapeutic algorithms for lower gastrointestinal bleeding with hemodynamic repercussions.

In turn, we must bear in mind that Meckel's diverticulum is a frequent cause of small bowel bleeding in young patients.

REFERENCES

1. Hansen CC, Søreide K. Systematic review of epidemiology, presentation, and management of Meckel's diverticulum in the 21st century. *Medicine* 2018;97:e12154.
2. Uppal K, Tubbs RS, Matusz P, Shaffer K, Loukas M. Meckel's diverticulum: a review. *Clin Anat* 2011;24:416-22.
3. Strate LL, Gralnek IM. ACG Clinical guideline: Management of patients with acute lower gastrointestinal bleeding. *Am J Gastroenterol* 2016;111:459-74. (correction *Am J Gastroenterol* 2016;111:755).
4. Oakland K, Chadwick G, East JE, et al. Diagnosis and management of acute lower gastrointestinal bleeding: guidelines from the British Society of Gastroenterology. *Gut* 2019;68:776-89.
5. Liu X, Chan DK, Tan KK. Angioembolisation of a bleeding Meckel's diverticulum. *J Gastrointest Surg* 2015;19:2286-87.

COMMENT

The presentation of a complicated Meckel diverticulum as hemorrhagic shock is unusual. The initial management corresponds to that of a lower gastrointestinal bleeding of any other etiology. It consists of a colonoscopy and if the bleeding site is not located, a hemodynamic study, as was done in this case, serves as a diagnostic and therapeutic method. Due to the evolution of the reported patient, surgical resolution was mandatory. It should be noted that the clinical suspicion of this entity as a cause of gastrointestinal bleeding plays a fundamental role, due to the infrequency of this presentation.

Florencia Ventura
Clínica Bazterrica. CABA, Argentina.