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Case Report

Cecal volvulus, an uncommon cause of lower intestinal obstruction: case report and literature review

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ABSTRACT

A volvulus is defined as a loop of bowel that undergoes torsion and rotation about its axis and the supporting mesentery, resulting in manifestations of intestinal occlusion. Depending on the degree of intestinal distension, blood flow may be compromised with risk of ischemia and perforation. Cecal volvulus is caused by axial rotation of the cecum, involving the terminal ileum and ascending colon due to alterations in fixation of the cecum. We present a case report of a 32-year-old male patient with no important surgical history who presented with lower intestinal occlusion secondary to cecum volvulus associated with flanges.

Keywords: Volvulus, Cecum, Colon, Laparotomy, Hemicolectomy, Anastomosis

INTRODUCTION

Colon volvulus is the third cause of intestinal obstruction, after obstructive colon tumors and diverticular disease. The most common location is 60-70% in the sigmoid colon, 25-40% in the cecum, 1-4% in the transverse colon and less than 1% in the splenic flexure. Colon volvulus represent only 5% of the cases of intestinal obstruction .[1] In Mexico, cecum volvulus represents 1-3% of intestinal obstructions and 21% of colon volvulus.[3] Cecal volvolus implies an axial twist of the cecum involving terminal ileum and right colon due to the alteration of normal cecal fixation to the peritoneum.[4]

The treatment of this pathology is surgical with detorsion, resection of the segment with ischemia and derivation or anastomosis, depending on the viability of the affected colon and the clinical condition of the patient.[5,6] The most effective treatment for cecal volvulus is surgical intervation.[7]

CASE REPORT

A 32-year-old male patient with no important surgical history. Admitted to the emergency unit for 72 hours of evolution with abdominal distension, colicky pain in mesogastrium, intensity 8/10 in analogous numerical scale, progressive, exacerbated by food intake, in addition to nausea and emesis of gastrobiliary content, without thermal rises. He refers constipation and obstipation of the same evolution time. Physical examination showed abdominal distension, absence of generalized peristalsis and tympanism in the right quadrant region, without clinical data suggestive of peritoneal irritation. On admission to the unit it was decided to start medical management with fasting, fluids, analgesia and nasogastric tube with gastrobiliary output of 200 cc at placement. Laboratory studies with evidence of leukocytosis and neutrophilia. Computed axial tomography of the abdomen was performed, identifying cecum volvulus, distension of the right colon and

striation of mesenteric fat, with no evidence of free fluid or pneumoperitoneum (Figure 1 and 2).

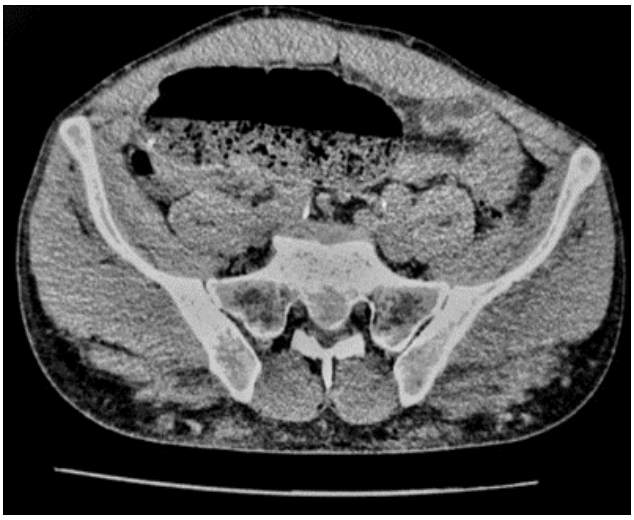

Figure 1: CT scan axial view, of cecum with distention up to 10 cm, hidro-areal level.

Figure 2: CT scan coronal view showing cecum volvulus, distension of the right colon and striation of mesenteric fat, with no evidence of free fluid or pneumoperitoneum.

Emergency surgical management was decided, performing exploratory laparotomy with findings of cecum volvulus axial rotation with flange as axis, right colon with maximum diameter of 10 cm, tapeworm with fiber rupture, without data of necrosis or perforation in the described segment, integral cecal appendix, terminal ileum without disruption with dilatation of intestinal loops (Figure 3 and 4). It was decided to perform right hemicolectomy and ileotransverse manual anastomosis, termino-terminal, in one plane with 2-0 Vicryl, transoperative bleeding of 100 cc. It was decided to admit the patient to the floor for postoperative surveillance, he was discharged on the fifth day after surgery without complications.

Figure 3: Product of right hemicolectomy due to cecum volvulus axial rotation with flange as axis, right colon with maximum diameter of 10 cm, without necrosis or perforation in the described segment, cecal appendix integrated, terminal ileum without disruption with dilatation of intestinal loops.

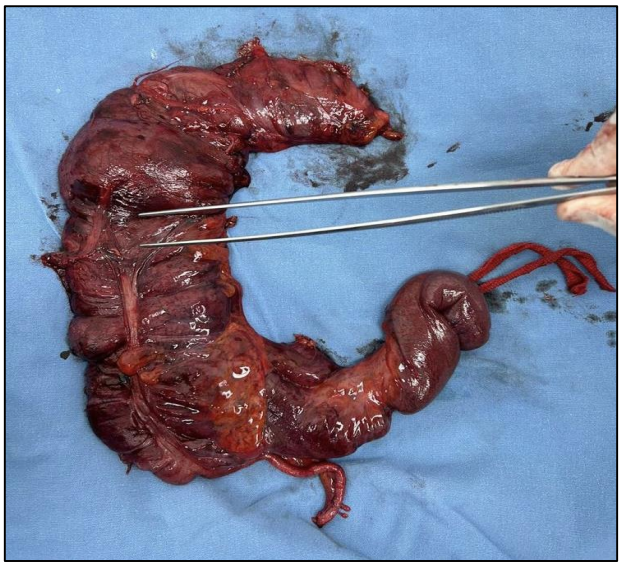

Figure 4: Product of right hemicolectomy, evidence of tapeworm rupture in relation to distension of the right colon, with no evidence of necrosis or perforation.

DISCUSSION

It is mentioned that colon volvulus is an uncommon cause of intestinal obstruction, being less frequent than

obstructive tumors or diverticular disease. Since the 20th century, surgical management has been described as a treatment for colon volvulus, with alternatives being detorsion and plication of the mesentery, resection and anastomosis or Hartmann's procedure.[1]

The risk factors related to cecum volvulus are chronic constipation, recurrent use of laxatives, history of surgical interventions with laparoscopy or laparotomy, laxity and fixation failures of the ileocecal region, gestation and history of pelvic surgery.[1,2]

Volvulus of the cecum occurs in relation to anatomical alterations due to failures in the fixation mechanisms of the ileocecal region. Alterations in the fixation of the right colon are described due to failure in the fusion of the mesentery of the right colon with the posterior parietal peritoneum, identified in up to 10-20% of the population.[8]

Regarding the physiopathogenesis, once the cecum segment has undergone torsion, there is colonic distension, decreased perfusion and development of ischemia, favoring bacterial translocation and gas production which increases colonic distension.[1]

Three types of cecal volvulus are mentioned, type 1 with axial rotation on the long axis with the cecum in the right lower quadrant, type 2 with torsion of the cecum and terminal ileum in a counterclockwise direction with an ectopic cecum after the volvulus, and type 3 in relation to cecum bascule.[3] The cecum bascule process involves anterosuperior plication without axial rotation and occurs in only 5-20% and has a better prognosis due to less vascular involvement.[1] Volvulus is described as a loop obstruction closed by the closure of the two ends of the segment that has become volvulus.[3]

Clinically, it presents with abdominal distension, constipation, nausea and vomiting, although the mobile cecum syndrome is described with repetitive pictures with spontaneous resolution. Laboratory studies do not provide a precise diagnosis, but allow the severity of the patient to be assessed and correlate with intestinal necrosis and sepsis.[1] Mobile cecum syndrome is described in up to 50% of patients with acute volvulus, described as recurrent manifestations with spontaneous resolution.[2]

Imaging studies are useful for the approach of these patients, being the initial study the simple abdominal radiography and studies with soluble contrast, however currently the use of computed tomography has been favored, since it specifies the diagnosis with a sensitivity of 100% and specificity of 90%.[1] Simple abdominal radiographs describe as findings, dilatation of the cecum, presence of a hydro-aerial level in the lower right quadrant and absence of distal air; up to 30% of these findings are not identified.[2]

CT findings are dilatation of proximal loops, absence of distal gas, identification of transition zone, assessment of severity according to colon distension, data of intestinal pneumatosis and thickening of the walls of the affected segment, data of pneumoperitoneum in case of perforation. In relation to cecal volvulus, the CT findings are the coffee bean sign or spiral sign in relation to the loop with torsion, local striation of fat and the cecal appendix full of air.[1,2]

Endoscopic management has a success rate of 30%, however, with a high risk of complications such as perforation, which is why it is not suggested as initial management.[2,6] Unlike sigmoid volvulus, the failure rate of endoscopic management is 75%, being a viable strategy in cases of high surgical risk.[5]

In the context of unstable patients, damage control surgery, intensive care unit management and reintervention are suggested. In the context of cecum volvulus, resection and restitution of the transit with anastomosis can be favored at the same surgical time.[1]

Initial medical management should be offered to patients with volvulus while identifying patients who would benefit from surgical management. Clinical findings of severity, perforation or ischemia are indications for urgent surgical management. Colonic necrosis and peritonitis are two risk factors that increase mortality up to 61%. Surgical management is necessary in these patients, being the approach through laparotomy with reduction of the volvulus and resection of the necrotic segment with anastomosis or stoma formation.[1] The need to resect colon segments depends on their viability, in case of necrosis and perforation always favor resection.[6]

CONCLUSION

Surgical treatment depends on the stability of the patient and the vascular compromise of the affected segment, management can be offered with ileocolic resection, right hemicolectomy with or without anastomosis. If there is no bowel involvement, detorsion can be performed; in case of bowel involvement and ischemia data, it is suggested not to untwist the segment in order to avoid reperfusion injury and favor resection. In the current context, minimally invasive techniques are suggested; the endoscopic approach should not be used as initial management in patients with cecal volvulus.

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