LUMEN ET VIRTUS

Cecal diverticulum in a female patient evolving to diverticulitis with conservative treatment: A case report

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Natalia Cervantes Uzeloto Guazi[1], Julia Maria Machado Luiz[2], Marcus Vinicius da Silva Zanelato[3], Maria Eduarda Monteiro Oliveira[4], Mariana Cantieri Martoneto[5], Naomi Gabriela Kubo[6], Nereida Christine de Camargo[7].

ABSTRACT

Introduction: Diverticula are commonly considered an acquired malformation that arises from a chronic increase in intraluminal pressure. This makes a diverticulum of congenital etiology, which can present with relatively younger complications in life, very rare, where men are more commonly affected. CD may appear as an incidental finding during surgery or as a complicated clinical presentation, such as diverticulitis. Operative treatment varies widely in the literature. Procedures range from simple isolated diverticulectomy and ileocecal resection to right hemicolectomy. However, there is still conservative treatment, with the use of antibiotics. Discussion: The incidence of CD in patients diagnosed with diverticulum is between 0.9 and 5% in Western countries. CD can be confused with acute appendicitis due to the similarities in clinical, laboratory, and radiological findings. A solitary cecal diverticulum is considered congenital in etiology and a true diverticulum. In our patient, her diverticulum was congenital, since it was single and solitary, and was considered rarer. In DCs detected before surgery or by diagnostic laparoscopy, nonsurgical treatment is increasingly being used. However, diagnosis before surgery is very difficult. Conclusion: CD, although rare in the Western population, should be considered in the differential diagnosis of patients complaining of pain in the right iliac fossa. Ultrasound or CT scan can reveal the correct diagnosis and have the benefit of avoiding intraoperative findings. The approach can include conservative treatment, diverticulectomy or right hemicolectomy.

Keywords: Cecal Diverticulum, Diagnosis, Diverticulite.

[1] Medical Graduate
Universidade do Oeste Paulista – UNOESTE
[2] Medical Graduate
University of Marília – UNIMAR
[3] Graduating from Medicine
University of Marília – UNIMAR
[4] Medical Graduate
University of Marília – UNIMAR
[5] Medical Graduate
University of Marília – UNIMAR
[6] Medical Graduate
University of Marília – UNIMAR
[7] Medical Graduate
University of Marília – UNIMAR

INTRODUCTION

Diverticula are commonly considered an acquired malformation that arises from a chronic increase in intraluminal pressure. This makes a diverticulum of congenital etiology, which can present relatively younger complications in life, very rare. Presenting with inflammation or infection of the diverticulum is even rarer, considering that less than 5% of all patients with diverticula of any etiology develop diverticulitis. No matter the age group or etiology, diverticula can develop anywhere along the colon, from the cecum and appendix to the sigmoid colon (LEE et al., 2021). However, the cecum and the ascending colon are rarely involved in colonic diverticulosis (KARATEPE et al., 2008).

Cecal diverticula form 3.6% of all colonic diverticula, and 13% of them develop inflammation at some point (KOSHY et al., 2016). Cecal diverticulum is a rare disease with a reported incidence of 0.04% to 2.1% (1–3). The condition is uncommon in Western countries, where 85% of diverticula occur more commonly in the descending and sigmoid colon than in the cecum. However, it has a higher incidence (up to 71%) in Eastern populations (NIKOLAOS MUDATSAKIS et a., 2014). Men are most commonly affected (male:female ratio of 3:2) and the average age at occurrence is 44 years. CD can be classified as congenital or acquired (KOSHY et al., 2016).

The etiology of cecal diverticulitis remains unclear. Even more unusual is a true solitary diverticulum, which contains all the layers of the intestinal wall and is considered to be of congenital origin (KARATEPE et al., 2008). Solitary cecal diverticula are thought to be congenital in origin and appear as an external pouch of the cecum at 6 weeks gestation. Because they comprise all layers of the colonic wall, including the muscle layer, they are therefore designated 'true' diverticula (GRIFFITHS and DATE, 2007). Congenital cecal diverticula are true diverticula; these include all layers of the cecal wall and develop at 6 weeks gestation from a transient pouch out of the cecum. False or acquired diverticula are similar to sigmoid diverticula and do not contain a muscle layer. CD can also be classified as solitary or multiple and can be found in the appendix, cecum, and ascending colon (KOSHY et al., 2016). When inflamed, they tend to perforate and cause acute and localized peritonitis (NIKOLAOS MUDATSAKIS et a., 2014).

Diverticulum of the cecum is usually asymptomatic and clinically presents with signs and symptoms similar to those of acute appendicitis when complicated, and its complications include hemorrhage, perforation, and inflammation, the latter being characterized as diverticulitis. Cecal diverticulitis is a rare condition that can cause acute abdomen. It may be associated with pain in the right iliac fossa, low fever and leukocytosis (SULEYMAN KALCAN et al., 2016). Some studies suggest clinical features that may help in the differential diagnosis of cecal diverticulitis from acute appendicitis. In particular, there is a longer duration of abdominal pain with absence of systemic toxic signs and a low incidence of nausea and vomiting. The symptoms of cecal diverticulitis usually

begin and remain located in the right iliac fossa, rather than following the usual process of acute appendicitis originating in the epigastrium (NIKOLAOS MUDATSAKIS et al., 2014). It is quite challenging to make a differential diagnosis between appendicitis and cecal diverticulitis preoperatively using clinical evaluation alone. It requires close cooperation between surgeon and radiologist, as well as clinical experience (EMRE GONULLU et al., 2021).

CD may appear as an incidental finding during surgery or as a complicated clinical presentation, such as diverticulitis. Colonoscopy is a valuable diagnostic tool in diagnosing diverticula. In addition, ultrasound and CT are useful in the early stages of the disease in patients with suspected diverticulosis. The main sonographic finding is a round, hypoechoic oval focus protruding from the thickened wall of the segmental colon. In patients with suspected diverticulitis, they may undergo CT. CT is also effective in showing complications such as fistula or abscess (SULEYMAN KALCAN et al., 2016). In addition, differential diagnoses of cecal diverticulitis to be considered are urinary tract infection, ureteral colic, gastroenteritis, pelvic inflammatory disease, Crohn's disease, colonic malignancy, perforated foreign body reaction, ileocecal tuberculosis and, especially, appendicitis. Acute appendicitis is the clinical diagnosis in 85% of cases of cecal diverticulitis (KOSHY et al., 2016).

Features of cecal diverticulitis on CT are similar to those of left-sided diverticulitis and include colonic wall thickening, pericolic fat infiltration, associated abscess formation, and extraluminal air denoting perforation. However, these features may also be present in other right-sided colonic pathologies, such as cecal carcinoma. Recently, magnetic resonance imaging has been shown to be useful in diagnosis (GRIFFITHS and DATE, 2007) (NIKOLAOS MUDATSAKIS et al., 2014). However, preoperative diagnosis of CD can only be achieved in 1% of patients. In 90% of cases, they are operated on for a preliminary diagnosis of acute appendicitis (SULEYMAN KALCAN et al., 2016).

Appendectomy for preliminary diagnosis of acute appendicitis is the most commonly performed emergency surgery, and cecal diverticulitis (CD) is detected in about 1/300 appendectomies. Incidental detection of the diverticulum of the cecum during appendectomy for acute appendicitis may lead to some uncertainty in terms of the extent of surgical treatment. The performance of concomitant appendectomy and the extension of resection for right hemicolectomy in complicated cases are controversial issues (SULEYMAN KALCAN et al., 2016). When diagnosed preoperatively, non-perforated cecal diverticulitis can be treated conservatively with intravenous antibiotics and supportive care, with caution, as complicated recurrences are common (up to 20%) (KOSHY et al., 2016). It is recommended that appendectomy be performed alongside diverticulectomy in patients with CD detected during surgery. Rarely, right hemicolectomy may be necessary in some specific and suspicious circumstances. Second-generation cephalosporins and

metronidazole should be continued for at least three days after surgery in patients undergoing appendectomy and diverticulectomy (SULEYMAN KALCAN et al., 2016).

The surgical treatment of cecal diverticulitis varies greatly in the literature (KARATEPE et al., 2008). Procedures range from simple isolated diverticulectomy and ileocecal resection to right hemicolectomy in patients with ongoing inflammation and suspected malignancy. Simple diverticulectomy with appendectomy may be appropriate if the intraoperative diagnosis of cecal diverticulitis is made with confidence. Diverticular resection can occur from the appendicular incision; It has low morbidity and mortality rates and is appropriate for solitary cecal diverticulitis. However, retrospective studies have shown that resection of the cecal diverticulum is not appropriate for large inflammatory lesions and in suspected cases of malignancy. In these cases, there is a need for more aggressive surgical methods, such as ileocecal resection and right hemicolectomy (NIKOLAOS MUDATSAKIS et al., 2014).

There are four grades of diverticulitis according to treatment guidelines (ACS recommendations). Grade I: inflamed diverticulum, where treatment is conservative if the diagnosis is made preoperatively. Grade II: inflamed mass. Grade III: localized abscess. For these two degrees, treatment is conservative if the diagnosis is preoperative; If the diagnosis is intraoperative, treatment is limited ileocecostomy or right hemicolectomy. Grade IV: perforation/ruptured abscess with generalized peritonitis; If the diagnosis for this grade is preoperative or intraoperative, treatment is limited ileocecostomy or right hemicolectomy. (KOSHY et al., 2016) (SULEYMAN KALCAN et al., 2016).

Treatment options for cecal diverticulitis vary widely depending on presentation and local experience. There is no consensus among surgeons as to the best option. For uncomplicated cecal diverticulitis diagnosed preoperatively, a conservative approach can be taken with bowel rest and antibiotic. However, others advocate aggressive surgical resection in cecal diverticulitis, as less than 40% of patients are successfully treated conservatively without recurrent symptoms (U.R. UWECHUE ET AL., 2012). Surgical resection ranges from diverticulectomy alone, ileocecal resection, and right hemicolectomy, in which they can be performed openly or laparoscopically (GRIFFITHS and DATE, 2007).

CASE DESCRIPTION

Patient M.P.M., female, 48 years old, hypertensive, hypothyroid, allergic to dipyrone. The patient sought care at the emergency room complaining of diffuse abdominal pain 3 days ago, which migrated to the right iliac fossa, associated with inappetence, nausea and chills, denying fever or other complaints. On physical examination, there was pain on palpation of the right iliac fossa, with negative abrupt decompression, with a diagnostic hypothesis of acute appendicitis. Ultrasound of the

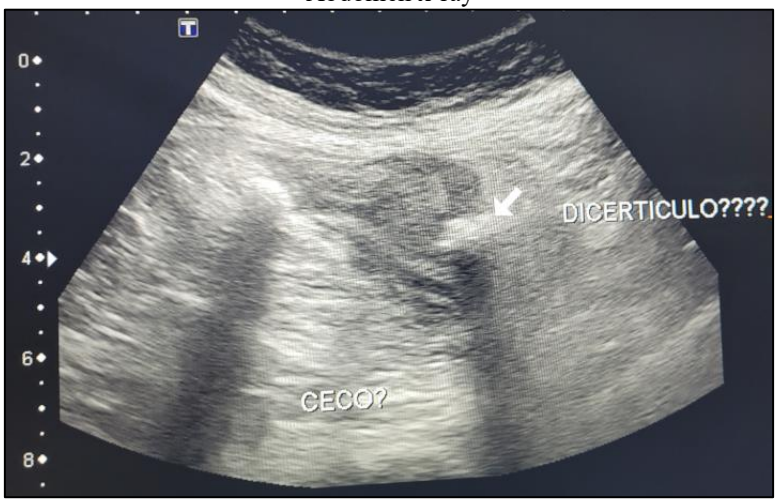
upper abdomen was performed, showing wall thickening involving the right colon and the cecum, with a focus of calcification on the medial border of the cecum, which may represent diverticulum associated with the inflammatory/infectious process, or even a bulky appendicolite at the base of the fecal appendix. In addition, the middle and distal third of the cecal appendix has parietal thickening and a slight increase in diameter. A CT scan showed wall thickening involving the cecum, with mucosal enhancement, showing parietal diverticulum in its medial border with fecalite inside, associated with blurring of the adjacent adipose planes, compatible with an inflammatory process. The cecal appendix has a retrocecal aspect, with a gaseous focus inside it and no inflammatory signs. The diagnosis was acute grade 1 diverticulitis in the cecum. The patient was maintained on analgesia, under conservative treatment with antibiotics. He was discharged from the hospital without complications, and followed up with colonoscopy to avoid future complications.

Upper abdomen CT scan



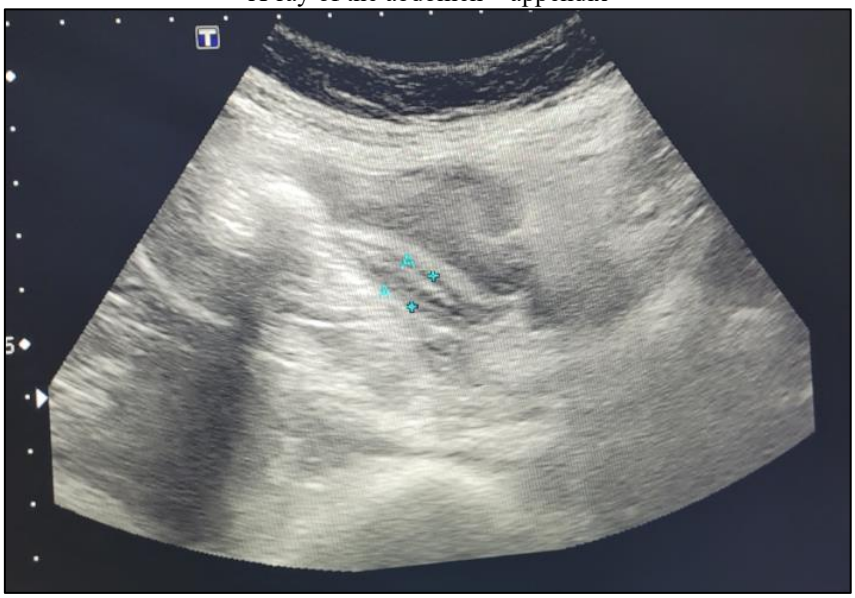
Images provided by Dr. Fernando Pereira de Almeida, Santa Casa de Misericórdia de Presidente Prudente.

Abdomen x-ray



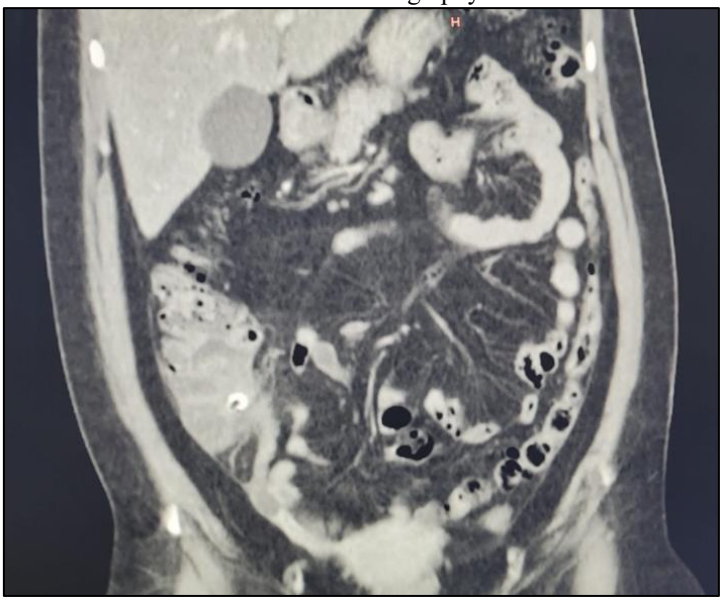
Images provided by Dr. Fernando Pereira de Almeida, Santa Casa de Misericórdia de Presidente Prudente.

X-ray of the abdomen – appendix



Images provided by Dr. Fernando Pereira de Almeida, Santa Casa de Misericórdia de Presidente Prudente.

Abdomen tomography



Images provided by Dr. Fernando Pereira de Almeida, Santa Casa de Misericórdia de Presidente Prudente.

DISCUSSION

The incidence of cecal diverticulitis in patients diagnosed with diverticulum is between 0.9 to 5% in Western countries. Cecal diverticulum is often detected in younger age groups and, although it is usually asymptomatic, it can present complications such as inflammation, hemorrhage, and perforation (SULEYMAN KALCAN et al., 2016). Unlike the patient in the case, who was not young and had symptoms, but with inflammation. Diverticulitis of the cecum can be confused with acute appendicitis due to similarities in clinical, laboratory, and radiological findings (EMRE GONULLU et al., 2021). As the patients are young and have pain in the right lower quadrant, they are often considered to have acute appendicitis, and the diagnosis of right-sided diverticulitis is made later in the operating room (KARATEPE et al., 2008).

The disease is often misdiagnosed at the time of its occurrence. The symptoms and signs of the disease are well known to closely mimic acute appendicitis with abdominal pain, low-grade fever, nausea, vomiting, abdominal tenderness, and leukocytosis (NIKOLAOS MUDATSAKIS et a., 2014). Some series have suggested that there are certain clinical features that may help differentiate the condition from acute appendicitis. These include: relatively longer history of pain in the right iliac fossa, relative absence of systemic toxic signs despite the duration of symptoms, nausea and vomiting are not common, symptoms usually begin and remain localized to the right iliac fossa, rather than initially presenting with vague central abdominal pain such as appendicitis (GRIFFITHS and DATE, 2007). In the case of the patient reported, the signs and symptoms she had were suggestive of appendicitis, and she was considered the first diagnostic hypothesis before the CT scan.

The solitary diverticulum of the cecum is believed to be a congenital lesion that appears as a saccular projection during the sixth week of embryonic development (KARATEPE et al., 2008). The cecal diverticulum was first described by Potier in 1912 and can be seen in two ways: congenital and acquired (SULEYMAN KALCAN et al., 2016). A solitary cecal diverticulum is considered congenital in etiology and a true diverticulum, defined as a projection that includes the mucosa, submucosa, and muscularis propria. These projections can appear as early as the 6th week of embryonic development. False diverticula are usually located in weak spots along the colonic wall and are associated with muscle atrophy at the site of penetrating rectus vessels (LEE et al., 2021). In our patient, her diverticulum was congenital, since it was single and solitary, and was considered rarer.

In DCs detected before surgery or by diagnostic laparoscopy, if the appendix is normal and there is no CD perforation, nonsurgical treatment is increasingly being used. However, diagnosis before surgery is very difficult and there is a high probability of perforation, so the implementation of non-surgical treatment may be risky (SULEYMAN KALCAN et al., 2016). More than 70% of patients with cecal diverticulitis have undergone a surgical procedure with an erroneous indication (KOSHY et al., 2016). In the case reported, the medical procedure performed was correct, since the diagnosis occurred before any surgery or medical intervention was performed.

The main appearances of an inflamed diverticulum on US are of a round hypoechoic structure arising from a thickened colonic wall segment. Stronger echoes arising from the lattice may represent gas or a fecolite within the diverticular lumen. These features, especially if a normal sonographic appearance of the appendix is found, are highly specific for right-sided diverticulitis (GRIFFITHS and DATE, 2007).

The surgical treatment of cecal diverticulitis varies greatly in the literature (KARATEPE et al., 2008). The surgical approach for resection of a solitary cecal diverticulum ranges from a simple diverticulectomy to a right hemicolectomy. They can be performed openly or laparoscopically (RU

UWECHUE et al., 2012). In case of preoperative diagnostic uncertainty, a limited right hemicolectomy is the ideal therapy, especially in cases of extensive inflammation or when suspected malignancy and granulomatous diseases cannot be ruled out. An emergency laparoscopic-assisted right hemicolectomy can be safely performed in patients with complicated cecal diverticulitis compared to the open approach, as it is associated with less blood loss and faster return of bowel function (NIKOLAOS MUDATSAKIS et al., 2014). Appendectomy for preliminary diagnosis of acute appendicitis is the most commonly performed emergency surgery, and cecal diverticulitis (CD) is detected in about 1/300 appendectomies. Incidental detection of the diverticulum of the cecum during appendectomy for acute appendicitis may lead to some uncertainty in terms of the extent of surgical treatment (SULEYMAN KALCAN et al., 2016). In the case here, the choice for conservative antibiotic-based treatment was the medical choice, together with the follow-up of the colonoscopy exam, to avoid complications.

METHODOLOGY

From a medical case that occurred at the Santa Casa da Misericórdia de Presidente Prudente, together with his medical record, information was collected to carry out this case report. In addition, a search for information was carried out in databases.

CONCLUSION

Cecal diverticulitis, although rare in the Western population, should be considered in the differential diagnosis of patients complaining of pain in the right iliac fossa. Preoperative imaging should be considered in patients who have a long history of right iliac fossa pain, do not have nausea and vomiting, or have an atypical history of acute appendicitis. Ultrasound or CT scan can reveal the correct diagnosis and have the benefit of avoiding intraoperative findings. The surgical approach should be adapted to the clinical setting, but may include conservative treatment, diverticulectomy, or right hemicolectomy.

CONFLICT OF INTEREST

The authors agree that there was no conflict of interest during this case report.

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