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A gas-filled abdominal cyst in an elderly woman: A giant colonic diverticulum case report



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ABSTRACT

INTRODUCTION: Giant colonic diverticulum (GCD), a rare complication of the diverticular disease, can present with a wide range of nonspecific symptoms as abdominal pain and bowel obstruction. Its diagnosis represents a challenge that mainly depends on imaging findings.

PRESENTATION OF CASE: We report the case of a 79 year-old female patient that came to our emergency department complaining of 5-day history of hypogastric pain and constipation. Physical examination revealed a 15 cm hypogastric round, tender and tympanic mass. Enhanced abdominal CT scan showed a large air-filled cyst adjacent to a diverticular sigmoid colon without evidence of intra-abdominal free air or fluid. Based on the radiological features, GCD was suspected and surgical treatment performed. The mass and the sigmoid colon were resected. The postoperative course was uneventful. Histopathology confirmed the preoperative diagnosis.

DISCUSSION: GCD, defined as a diverticulum larger than 4 cm, represents a rare complication of the diverticular disease. Usually abdominal X-ray and computed tomography (CT) scan show a gas-filled structure, sometimes communicating with the adjacent colon. GCD resection and segmental colectomy are strongly recommended even in asymptomatic cases due to the high incidence and severity of complications.

CONCLUSION: Because of its rarity and variable and non-specific clinical presentation, the diagnosis of GCD depends mainly on imaging findings. The gold standard treatment is surgical resection of the GCD and the compromised colon with primary anastomosis when possible.

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1. Introduction

Giant colonic diverticulum (GCD), defined as a diverticulum larger than 4 cm, is a rare complication of the diverticular disease more frequently seen in the sigmoid colon. It is thought to result, in most cases, from a “ball-valve” effect. Because of its rarity and its unspecific clinical presentation its diagnosis represents a challenge that mainly depends on imaging findings and a high grade of suspicion [1,2].

Usually the abdominal computed tomography (CT) scan shows a gas-filled structure, sometimes communicating with the adjacent colon, with a smooth, thin diverticular wall that does not enhance after injection of contrast. Surgical approach is recommended even in asymptomatic cases, due to the high incidence and severity of complications, being the segmental colectomy with primary anastomosis the gold standard treatment [3].

1.1. Presentation of case

In line with the CARE guidelines [4], we report the case of a 79 year-old female Caucasian patient presented to our emergency department complaining of 5-day history of hypogastric abdominal pain and constipation. Physical examination revealed a 15 cm hypogastric round, tender and tympanic mass. Blood test were normal. After endovenous and rectal administration of iodinated contrast an abdominal CT scan was performed. It showed a large (16 cm × 2 cm) air-filled cyst adjacent to a diverticular sigmoid colon without evidence of intra-abdominal free air or fluid (Figs. 1–3). Based on the radiological features, GCD was suspected. Resection of the GCD and the compromised colon was indicated. Although laparoscopic approach is the gold standard for colon resection, the preoperative anesthesiological evaluation contraindicated the minimally invasive procedure because of the patient important cardiovascular and pulmonary compromised function (ASA III). During surgery a large air-filled cyst occupying the lower abdomen and pelvis was found. It developed from the antimesenteric border of the mid-sigmoid colon and was densely adherent to a small bowel loop and pelvic organs (Fig. 4). Moderate diverticular disease was present in the adjacent sigmoid colon. Excision

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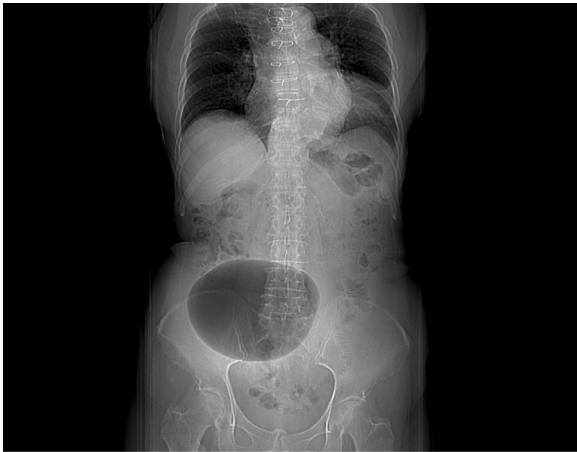


Fig. 1. Enhanced abdominal CT scan with large air-filled cyst.



Fig. 2. Enhanced abdominal CT showing air-filled cyst adjacent to a diverticular sigmoid colon.



Fig. 3. Non enhanced air-filled cyst adjacent to a diverticular sigmoid colon in double contrast CT scan.

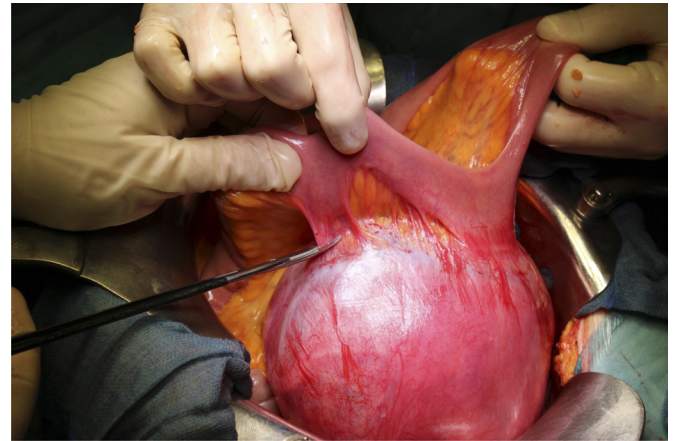


Fig. 4. Large air-filled cyst occupying the lower abdomen and pelvis with adhesions to a small bowel loop.

of the air-filled cyst and affected sigmoid resection with primary anastomosis were performed. The patient had an uneventful post-operative course, she had clear diet on post-operative (PO) day 3 when she had normal bowel sounds and she was progressed to regular diet when she had the first bowel movement on PO day 5 being discharged home on the 10th PO day.

Histology confirmed the presence of a pseudocyst with a wall consisting of fibrous tissue, chronic inflammatory cells, and foreign-body reaction with no evidence of malignancy.

2. Discussion

Diverticular disease of the sigmoid colon prevails in Western society. Its presentation may vary greatly, from asymptomatic diverticulosis to perforated diverticulitis. In 1978, Hinchey et al. published their classification for acute diverticulitis [5]. Since then, several modifications and grading systems have been presented to display a more complete overview of the disease. Information provided by CT scans and the use of new treatment techniques, such as CT-guided percutaneous drainage of abscesses led to modifications of the original Hinchey classification by Sher et al. [6], Table 1. In our case, at the time of diagnosis there were no signs of localized abscess, the patient clinical situation was probably the result of a microperforation.

Although diverticular colon disease is common, giant colonic diverticulum is very rare. GCD is, by definition, a colic diverticulum greater than 4 cm in size; arising in approximately 90% of the cases from the sigmoid colon. Although they might be isolated, 85% of the cases are associated with concomitant diverticular disease. The first literature description by Bovin and Bonte dates back to 1946, while the first radiological diagnosis had been reported in 1953 by Hughes and Greene [7,8].

McNutt et al. divided giant diverticulum into 3 entities, based on their etiological origin:

Type 1: A pseudodiverticulum presenting as an out-pouching of mucosa and submucosa that protrudes through a defect in the vasa recta penetration along the mesenteric border. Histologically, it is often lined with chronic granulation tissue with patches of colonic mucosa without evidence of smooth muscle presence [9]. A ball-valve mechanical obstruction and infection with gas production can contribute to its enlargement, being probably the result of colonic diverticular disease complicated with microperforation as it was in our case.

Type 2: An inflammatory GCD secondary to a focal subserosal perforation that leads to a walled-off abscess cavity lined with

Table 1
Hinchey classification and modified Hinchey classification by Sher et al.

Hinchey classification [5]		Modified Hinchey classification, Sher et al. [6]	
I	Pericolic abscess or phlegmon	I	Pericolic abscess
II	Pelvic, intraabdominal, or retroperitoneal abscess	IIa	Distant abscess amenable to percutaneous drainage
		IIb	Complex abscess associated with fistula
III	Generalized purulent peritonitis	III	Generalized purulent peritonitis
IV	Generalized fecal peritonitis	IV	Generalized fecal peritonitis
		V	Fecal peritonitis

fibrous scar tissue without presence of intestinal layers that gradually enlarges to a giant size.

Type 3: A true GCD that possesses all the layers of the colonic wall. This type, structurally a duplication cyst, has a probable congenital origin and should be approached in the same way by resection of the cyst and the diseased colon [2] [10–12].

Choong and Frizelle suggested a new classification based on the histology of disease, and divided colonic diverticula into 2 types. Type 1 is a pseudodiverticulum whose wall consists of fibrous tissue without the presence of a muscle layer (87%), and it is related to diverticular disease. Type 2 is a true diverticulum, it constitutes a congenital, usually, pediatric condition [13].

More than 90% of the GCD are located on the antimesenteric border of the sigmoid colon, the location related to the higher incidence of diverticular disease. They have also been described in other places, such as the cecum, transverse colon, splenic flexure and descending colon. They are usually single, although more than one can be present in the same patient [14].

Regarding the GCD clinical features, most of the patients manifests the disease after the sixth decade of life, with a mean age of 65 years. There is no gender predilection. Clinical presentation is variable and can be divided into 4 groups:

- 1 Acute presentation: with abdominal pain, fever, signs and symptoms of bowel obstruction and rectal bleeding. The acute picture may be suggestive of acute diverticulitis.
- 2 Chronic presentation: with unspecific symptoms as vague abdominal discomfort, bloating and constipation.
- 3 Presentation with complications: secondary to perforation, abscess formation, volvulus, acute bowel and urinary obstruction, infarction, fistula formation, and extremely rare development of carcinoma inside the GCD.
- 4 Asymptomatic cases: where a abdominal an abdominal mass is detected during physical examination or an air-filled cystic formation observed in an imaging procedure [2,14].

In a review study of 166 reported cases, Nigri et al., observed abdominal pain as the most common symptom (69% of the cases), followed by constipation (17%), sensation of an abdominal mass (17%), vomiting (12%), diarrhea (11%), rectal bleeding (9%), fever (20%) [12]. Perforation was observed at presentation or time of surgery in 26.5% of the cases [15,16].

The diagnosis of GDC is based on radiology findings. An abdominal X-ray typically shows a large gas-filled cyst sometimes with an air-fluid level inside. A CT scan is the most accurate exam, it allows a correct diagnosis in nearly all the cases, demonstrating a smooth-walled gas-filled cyst. When intestinal contrast is used, continuity between the diverticulum and the colon can be observed. Barium enemas and colonoscopy are rarely indicated because of the risk of diverticulum perforation during the procedure [16–19].

The aim of the treatment is to alleviate the symptoms and prevent the high incidence of complications for which surgical management is mandatory. Elective treatment consists of excision of the cyst and segmental colonic resection with primary anastomosis.

Simple diverticulectomy with primary bowel closure has been described when the adjacent colon does not show diverticular disease. For complicated cases, a bowel resection with colostomy is recommended [2].

3. Conclusion

GCD is a rare complication of colonic diverticulosis with a wide spectrum of clinical presentations and a high incidence of complications. Its diagnosis is confirmed by radiological imaging, especially abdominal CT where an air-filled cyst results to be the classical finding. Based on symptoms, high incidence of complications and concomitant diverticular disease, the gold standard treatment is excision of the GDC with segmental resection of the compromised colon and primary anastomosis when possible.

Conflicts of interest

No conflicts of interest to declare.

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Ethical approval

As a case report article we did not ask for ethical approval.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

We do not have additional contributors. Each author participated equally in the completion of this manuscript.

Guarantor

Ana Carolina del Pozo, Ph.D.

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