ACG CASE REPORTS JOURNAL

CASE REPORT | COLON

Beyond the Norm: Acute Multifocal Diverticulitis

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ABSTRACT

Colonic diverticulitis is inflammation of diverticula, which are sac-like protrusions in the colonic wall. It is thought that increased intraluminal pressure and trapped food leads to inflammation. Newer theories suggest that alterations in the gut microbiome and chronic inflammation play a role as well. Diverticulitis commonly affects discrete sections of colon. Acute multifocal diverticulitis is defined as diverticulitis in at least 2 different sites of the colon separated by at least 10 cm, which is very rare. Ideal management is unclear; however, our patient improved with supportive measures and antibiotics without complications of abscess, perforation, or need for surgery.

KEYWORDS: Multifocal diverticulitis; diverticulosis; colitis; diarrhea

INTRODUCTION

More than 70% of individuals develop colonic diverticulosis, characterized by sac-like protrusions called diverticula, by age 80.[1] In Western countries, diverticula are more common in the left colon, while in Asian populations, they are more prevalent in the right colon, likely due to genetic factors.[2] However, pan-colonic diverticulosis is also common. Diverticulitis, the inflammation of one or several adjacent diverticula, can be uncomplicated or complicated with abscesses, obstruction, bleeding, fistulae, or perforation.[2] Multifocal diverticulitis (MFD) is extremely rare. We present a unique case of acute MFD in an elderly woman.

CASE REPORT

A 92-year-old woman with a history of hyperlipidemia, pulmonary sarcoidosis (previously treated with steroids), and internal hemorrhoids presented with a week-long history of worsening diarrhea and general abdominal discomfort. She also reported poor appetite and generalized weakness. The diarrhea was green-brown, slimy, and profuse, occurring multiple times per day. It required the use of multiple diapers and included 1 episode of bloody stool. She denied experiencing fevers or chills. Her last screening colonoscopy at age 80 was reportedly unremarkable, although the results were not available for review.

The patient had been under outpatient care with colorectal surgery for rectal bleeding due to hemorrhoids, which were treated with banding, for 2 years before this admission. About 9 months prior, she was hospitalized for rectal bleeding, with a computed tomography (CT) scan revealing left-sided colitis. The patient endorsed weakness and decreased oral intake at that time. After admission, her primary care doctor ordered a CT scan of the abdomen and pelvis, revealing new soft tissue thickening in the ascending colon near the cecum, suggestive of a mass, and paracolic haziness at the descending-sigmoid junction, indicating possible diverticulitis. Positron emission tomography scan showed an intensely fludeoxyglucose-avid focus in the left anterior pelvis at the junction of the left and rectosigmoid colon, strongly suspicious for malignancy.

She followed up with colorectal surgery but deferred colonoscopy, opting to pursue further workup if symptoms worsened. Although she initially improved in fatigue, abdominal pain, and diarrhea, she experienced functional decline about 2 months before admission.

ACG Case Rep J 2024;11:e01505. doi:10.14309/crj.0000000000001505. Published online: September 12, 2024

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Her daughter contacted the colorectal surgeon, noting decreased oral intake, weakness, and fatigue. They planned an outpatient colonoscopy, but the patient returned to the emergency department before it could be scheduled.

Upon admission, her vital signs were stable: temperature 98.8°F, heart rate 80 bpm, and blood pressure 102/70 mm Hg. Labs showed a white blood cell count of 9.8 K/μL, hemoglobin 12 g/dL, C-reactive protein 27.0 mg/dL, sedimentation rate 66 mm/h, fecal calprotectin 2,562.8 μg/g, and carcinoembryonic antigen 1.7. Stool tests (culture, polymerase chain reaction, *Clostridioides difficile*, ova and parasites, and leukocytes) were negative. Abdominal CT revealed diffuse colonic wall thickening with pericolonic stranding, suggesting extensive inflammation (Figure 1). The differential diagnosis included ischemic or infectious colitis or malignancy, considering prior imaging findings. Colorectal surgery and gastroenterology were consulted.

Because of weight loss and abnormal imaging, a colonoscopy was performed 2 days after admission. It revealed pan-colonic diverticulosis with purulent drainage throughout the colon, consistent with acute MFD. Severe inflammation, including congestion, friability, pseudopolyps, and scarring, was observed in the sigmoid colon (Figure 2). Biopsies showed increased lymphoplasmacytic infiltration in the lamina propria, along with mucosal erosion, ulceration, and granulation tissue formation. The mucosal erosion/ulceration and associated granulation tissue formation could indicate infection, diverticulitis, or similar conditions (Figure 3).

The patient was treated with intravenous hydration, intravenous ceftriaxone 1 g daily, and oral metronidazole 500 mg every 8 hours, which eventually resolved her diarrhea and abdominal pain. She was discharged on oral metronidazole 500 mg every 8 hours and oral cefpodoxime 100 mg twice daily to complete a 14-day course of antibiotics. Although she initially improved, she died 6 months later. According to her daughter, the patient experienced recurring acute diverticulitis and was frequently admitted to an outside hospital. Three months after discharge, the daughter reported that the patient continued to decline. She died comfortably at home, although the exact cause was unclear.

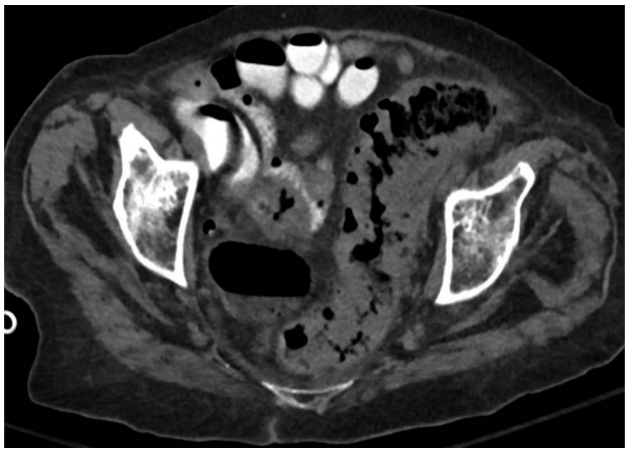

Figure 1. Abdominal computed tomography scan showed diffuse colonic wall thickening with pericolonic stranding.

DISCUSSION

Diverticulosis is thought to result from elevated pressure, especially in narrower colon segments, notably the descending and sigmoid colon. Acquired diverticula develop due to increased intraluminal pressure and abnormal colonic motility. Dietary factors, such as low fiber intake and high red meat consumption, can worsen intraluminal pressure and weaken the bowel wall.[3] In Europe and North America, 90% of diverticular disease cases involve the sigmoid colon, with only 15% affecting the right side.[4] Risk factors of diverticulosis include diet, sedentary lifestyle, obesity, smoking, alcohol use, family history, and certain medications, such as nonsteroidal anti-inflammatory drugs and steroids. Once diverticulosis is identified on imaging or endoscopic evaluation, there is no specific treatment other than recommending modifications to reduce the mentioned risk factors.[5] Potential complications of diverticular disease include acute or smoldering diverticulitis, diverticular bleeding, or segmental colitis associated with diverticulosis.[6]

Approximately 4% of patients with diverticulosis develop diverticulitis, with the risk increasing with age and typically manifesting in the mid-60s.[7] In Western countries, diverticulitis primarily affects the left side of the colon, whereas right-sided cases occur in only 1.5% of patients.[8] The pathogenesis also remains unclear. Traditionally, it was believed that erosion of the diverticular wall due to increased intraluminal pressure or trapped food particles led to inflammation. However, newer theories suggest that alterations in the microbiome and chronic inflammation from conditions such as diabetes and cardiovascular disease play significant roles in the development of diverticulitis. Recent studies have explored fecal microbiota transplantation as a potential treatment for diverticulitis, although it has not yet become a standard practice.[9]

Acute diverticulitis typically affects discrete colon segments, such as the sigmoid. Acute MFD is extremely rare, with only a few cases reported in the literature.[9,10] MFD has been observed at a younger age of onset and patients more commonly had a family history of diverticulosis.[9] Due to its rarity, the true prevalence and risk factors of MFD remain unknown. As such, the clinical course, rates of complications, and ideal management are also unclear. However, in our case, the patient improved with supportive measures and antibiotics without experiencing complications such as abscess, perforation, or the need for surgery.

In a 2019 retrospective study by Kline et al, 404 patients with CT-confirmed diverticulitis were included. Among them, 28

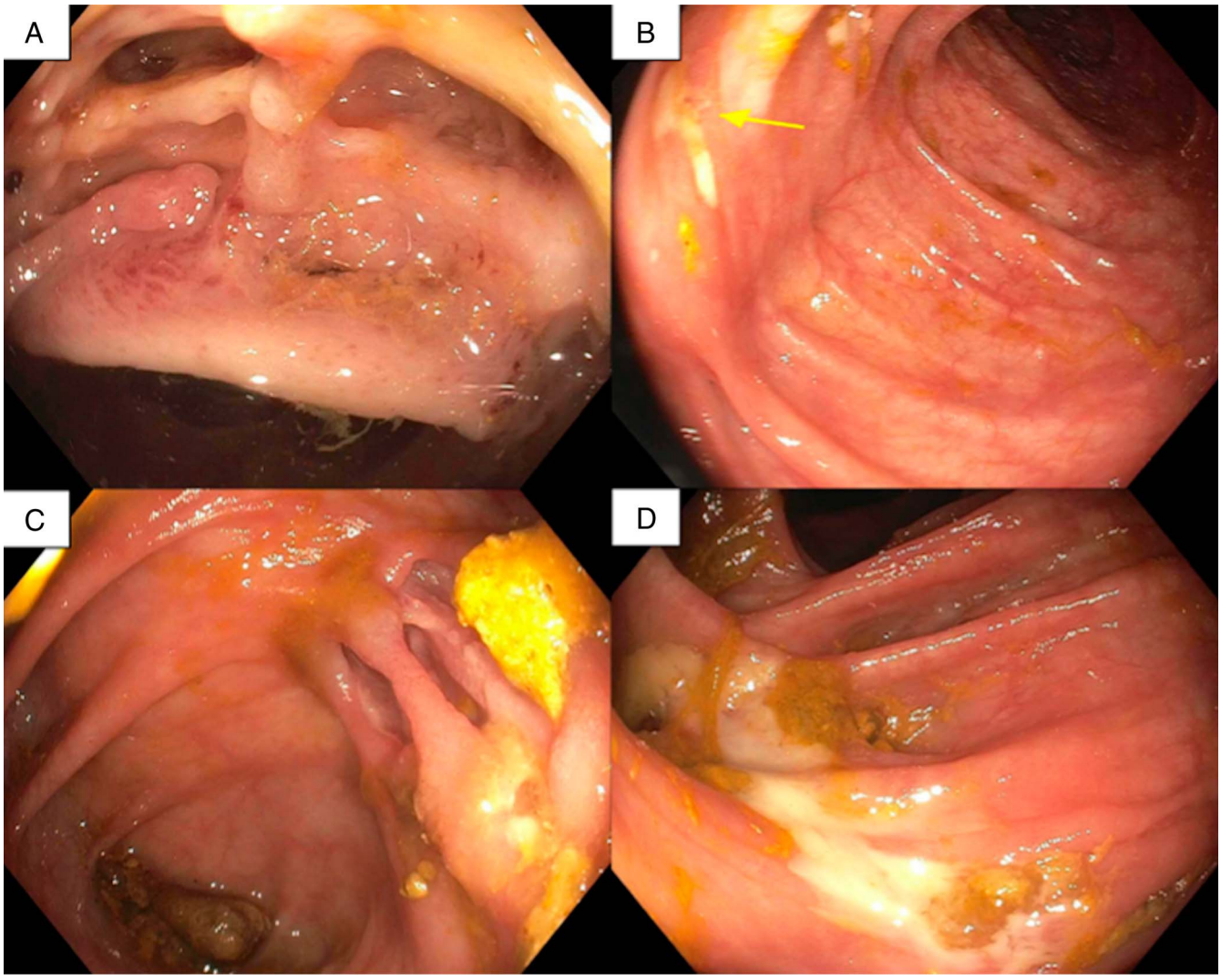

Figure 2. Colonoscopy revealed multiple diverticula with purulent material (indicated by yellow arrow) in the sigmoid colon (A), splenic flexure (B), cecum (C), and ascending colon (D), consistent with acute multifocal diverticulitis.

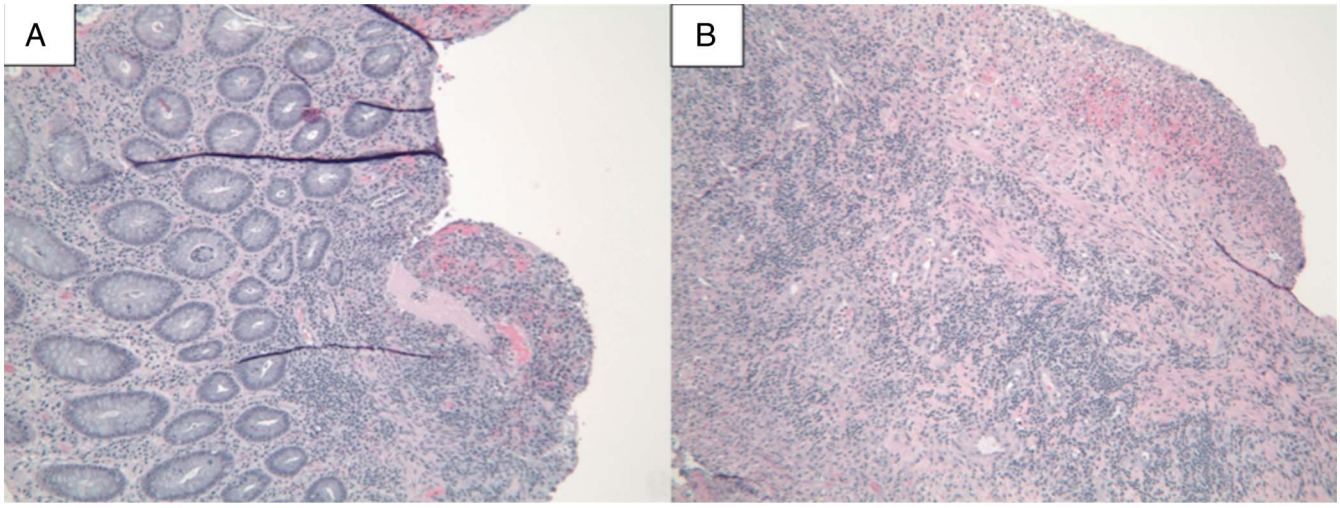

Figure 3. A hematoxylin and eosin–stained section of the colonic mucosa showed focal surface erosion and mild acute inflammation. Background crypts showed normal architecture (A, 100×) alongside severely inflamed granulation tissue (B, 100×).

patients (6.9%) had MFD. These patients experienced more frequent episodes of diverticulitis, had a higher incidence of positive family history, right-sided disease, and a higher likelihood of needing surgery. All patients with MFD who underwent segmental resection experienced recurrence, whereas recurrence was less common in those with more extensive surgery. These findings suggest that MFD represents a more severe form of the disease, possibly with a genetic component. Transcriptomic data indicate potential associations with alterations in the immune response.[9] Management of MFD should be individualized to the patient and presentation. If a patient has multiple areas of diverticulosis but is only symptomatic from 1 discrete portion, treatment should include conservative management for uncomplicated disease. Surgical or percutaneous intervention should be considered for more complicated disease, such as abscess, perforation, or severe symptomatology, or in patients with immunosuppression.[11]

In summary, diverticulosis is highly prevalent but not always harmful, while diverticulitis is a common complication. Acute diverticulitis typically affects a specific segment and often responds well to antibiotics, although recurrence and the need for surgery are possible. Acute MFD is exceptionally rare and may suggest a more severe clinical subtype, but further research is needed to understand this condition comprehensively.

DISCLOSURES

Author contributions: B. Thakkar wrote the initial manuscript and is the article guarantor. J. Tidwell and MTT Nguyen edited the manuscript and added additional information. G. Yu provided the pathology images. N. Parikh served as the supervising attending and assisted with editing the final draft.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received May 22, 2024; Accepted August 12, 2024

REFERENCES

1. Turner GA, O'Grady MJ, Purcell RV, Frizelle FA. The epidemiology and etiology of right-sided colonic diverticulosis: A review. *Ann Coloproctol.* 2021;37(4):196–203.
2. Meyer DC, Hill SS, Bebinger DM, et al. Resolution of multiply recurrent and multifocal diverticulitis after fecal microbiota transplantation. *Tech Coloproctol.* 2020;24(9):971–5.
3. Monari F, Cervellera M, Pirrera B, et al. Right-sided acute diverticulitis: A single Western center experience. *Int J Surg.* 2017;44:128–31.
4. Lucas JMP, Roberts CA, Gunderson CA, Liuzzi FJ, Rosenthal OD. Acquired diverticulosis of the entire colon in a cadaver. *Cureus.* 2020;12(9):e10511.
5. Telem DA, Buch KE, Nguyen SQ, Chin EH, Weber KJ, Divino CM. Current recommendations on diagnosis and management of right-sided diverticulitis. *Gastroenterol Res Pract.* 2009;2009:359485.
6. Sakhalkar OV, Goyal A, Abualruz AR. Segmental colitis associated with diverticulosis. *Cureus.* 2023;15(5):e38724.
7. Papatriantafyllou A, Dedopoulou P, Soukouli K, Karioris I, Tsochatzis S. Right-sided diverticulitis: A rare cause of right-sided abdominal pain. *Cureus.* 2023;15(4):e37123.
8. Lee IK. Right colonic diverticulitis. *J Korean Soc Coloproctol.* 2010;26(4):241–5.
9. Kline BP, Schieffer KM, Choi CS, et al. Multifocal versus conventional unifocal diverticulitis: A comparison of clinical and transcriptomic characteristics. *Dig Dis Sci.* 2019;64(11):3143–51.
10. Castañeda-Argáiz R, Rodríguez-Zentner HA, Tapia H, González-Contreras QH. [Synchronous diverticulitis: A case report.]. *Rev Gastroenterol Mex.* 2010;75(1):93–6.
11. Tochigi T, Kosugi C, Shuto K, Mori M, Hirano A, Koda K. Management of complicated diverticulitis of the colon. *Ann Gastroenterol Surg.* 2018;2(1):22–7.