

Endoscopic appearance is not sufficient for a diagnosis of segmental colitis associated with diverticulosis

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Abstract

Background It has been recently shown that the prevalence of segmental colitis associated with diverticulosis (SCAD) is about 2% of all patients who have colonic diverticulosis. However, sometimes it can be overdiagnosed if only endoscopic criteria are applied. We have recognized endoscopic signs of SCAD (lesions of the interdiverticular mucosa with diverticular and rectal sparing) in patients with a variety of conditions other than SCAD.

Method We reviewed clinical, endoscopic and histologic data from selected patients with endoscopically visualized signs of SCAD.

Results Five patients with endoscopic signs of SCAD were included in this study. SCAD was excluded by the lack of specific biopsy findings, combined with laboratory exams. Final diagnoses were iatrogenic colitis due to immunotherapy (n=1), eosinophilic colitis (n=1), *Salmonella typhi* (n=1), undetermined inflammatory bowel disease (n=1), and Crohn's disease (n=1).

Conclusions Lesions of the interdiverticular mucosa with diverticular and rectal sparing are not specific for SCAD, but rather a predictor of disease. In consequence, histology and, if necessary, laboratory analyses are mandatory to support a correct SCAD diagnosis.

Keywords Diverticulosis, endoscopy, histopathology, segmental colitis associated with diverticulosis, treatment

Ann Gastroenterol 2024; 37 (3): 377-380

Introduction

Diverticulosis is the most frequent anatomic alteration that can be detected throughout the colon [1]. The large majority of people who have diverticulosis live a lifetime without recording any symptom, while the majority of people who do experience

symptoms linked to the diverticula may develop the so-called "symptomatic uncomplicated diverticular disease", in which there is low-grade inflammation, long-lasting abdominal pain in the left-lower abdominal quadrant, and mild increasing of fecal calprotectin [1], and/or the so-called "acute diverticulitis", namely acute inflammation of the diverticulum [1]. Alongside these main manifestations in symptomatic patients, a small percentage of patients with diverticulosis may develop a type of chronic colitis called "segmental colitis associated with diverticulosis" (SCAD) [1]. This is a chronic inflammation that affects the left colon, harboring diverticula, with endoscopic and histological inflammation of the interdiverticular mucosa and sparing of the diverticula [2]. By definition, endoscopic and histological inflammation spares the rectum and proximal colon [2]. According to the current literature, its prevalence is estimated to be around 2% of patients with diverticulosis [3-6]. The endoscopic appearance has been considered the main tool for supporting the diagnosis, and an endoscopic classification to grade the endoscopic lesions in SCAD patients has been developed [7]. However, sometimes it seems that this is insufficient as a basis for a correct SCAD diagnosis [8]. The reason is that a histology assessment is not always performed, leading to an incorrect diagnosis of SCAD. The aim of this case series is to describe some cases in which the combination of histology and laboratory testing led to a diagnosis other than SCAD.

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Conflict of Interest: None

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Received 4 November 2023; accepted 16 February 2024; published online 6 March 2024

DOI: <https://doi.org/10.20524/aog.2024.0875>

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Case series

This case series included 5 adult patients, diagnosed between January 2019 and August 2023 at our center. In these patients, the initial diagnosis of SCAD, based on endoscopic criteria, was contradicted by histology and/or laboratory findings, thus changing the final diagnosis.

All procedures performed in this case series involving human participants were in accordance with the ethical standards of the institutional and/or national research committee, and with the 1964 Helsinki declaration and its later amendments, or comparable ethical standards. The patients gave written informed consent to undergoing a colonoscopy study and to the management of their data.

Case 1

A 41-year-old woman, who suffered from metastatic breast cancer under treatment with trastuzumab for 6 months, underwent colonoscopy because of recurrent rectal bleeding without abdominal pain occurring 3 months after the starting trastuzumab treatment. Colonoscopy showed diverticulosis of the sigmoid, involving patched red areas with erosions, without diverticular inflammation (Fig. 1A), and with sparing of the rectum and the proximal colon. The endoscopic appearance was compatible with SCAD type B [7]. Histology of the sigmoid (Fig. 1B) and rectum (Fig. 1C) showed mild active inflammation, without architectural changes. Bacterial and parasitic analysis of the stool were negative. The SCAD diagnosis was therefore rejected. A final diagnosis of acute colitis due to immunotherapy was made, and the patient was successfully treated with beclomethasone dipropionate and mesalazine.

Case 2

A 59-year-old man with a history of food allergy (peanuts), allergy to inhalants (grasses), and allergy to ketoprofen, underwent colonoscopy because of recurrent episodes of diarrhea (up to 6 bowel movements/day), without abdominal pain or rectal bleeding. A complete laboratory workup was unremarkable, with a normal eosinophilic count (170 cells/ μ L). Colonoscopy showed diverticulosis of the sigmoid and the descending colon, without signs of diverticular inflammation, and with red patches 0.5-1 cm in size in the descending colon and sigmoid (Fig. 1D). No endoscopic inflammation was found in other colonic regions. The endoscopic appearance was compatible with SCAD type A [7]. Histology of the sigmoid showed a mild chronic inflammatory infiltrate (Fig. 1E), while the rectum showed mild acute-chronic inflammation, with eosinophil infiltration and eosinophil cryptitis, without architectural changes (Fig. 1F) (sigmoid: 20/high-power field [HPF]; rectum: 43 HPF; 1 HPF corresponds to 0.196 mm²). Bacterial and parasitic analysis of the stool was negative. The diagnosis of SCAD was therefore rejected. A final diagnosis of eosinophil colitis was made [9], and the patient was successfully treated with budesonide and levocetirizine.

Case 3

A 37-year-old man was admitted to the hospital with abdominal pain, diarrhea (up to 10 bowel movements/day), often with bleeding, and fever (up to 38°C). Laboratory tests showed leukocytosis (white blood cell count [WBC] 11,250/ μ L), C-reactive protein 29.3 mg/dL, erythrocyte sedimentation rate 82 mm/h, and fecal calprotectin 797 μ g/g. The patient underwent colonoscopy, which showed diverticulosis of the sigmoid, without signs of diverticular inflammation, but with diffuse edema of the colonic folds and erosions (Fig. 1G). No erosions were found in the other colonic regions, but diffuse hyperemia was present, especially in the rectum. The endoscopic appearance was compatible with SCAD type D [7]. Histology of the sigmoid (Fig. 1H) and rectum (Fig. 1I) showed diffuse and active inflammation, with cryptitis and cryptic abscesses, but without architectural changes. The diagnosis of SCAD was rejected, and a diagnosis of ulcerative colitis was hypothesized. However, bacterial analysis of the stool showed *Salmonella typhi* infection, confirmed by Widal-Wright serodiagnosis (both antigen O and antigen H >1:160). A final diagnosis of infectious colitis was made, and the patient was successfully treated with trimethoprim-sulfamethoxazole.

Case 4

A 66-year-old man underwent colonoscopy for a 3-month history of abdominal pain, diarrhea (up to 8 bowel movements/day) and rectal bleeding. Colonoscopy showed diverticulosis of the sigmoid and the descending colon, without signs of diverticular inflammation and with erosions at the top of the colonic folds (Fig. 1J). The endoscopic appearance was compatible with SCAD type B [7]. Histology of the sigmoid (Fig. 1K) and rectum (Fig. 1L) showed active inflammation, with glandular distortion and mucin depletion. The diagnosis of SCAD was therefore rejected. A search for bacteria and parasites in the stool was negative. The final diagnosis of undetermined inflammatory bowel disease was made, and the patient was successfully treated with beclomethasone dipropionate and mesalazine.

Case 5

A 30-year-old woman underwent colonoscopy for a 6-month history of abdominal pain, diarrhea (up to 5 bowel movements/day) and rectal bleeding. Laboratory tests showed mild leukocytosis (WBC 10,990/ μ L), C-reactive protein 19.7 mg/dL, erythrocyte sedimentation rate 46 mm/h, and fecal calprotectin 993 μ g/g. Colonoscopy showed diverticulosis of the sigmoid and the descending colon, without signs of diverticular inflammation, and with isolated aphthous lesions in the interdiverticular mucosa (Fig. 1M). The endoscopic appearance was compatible with SCAD type C [7]. However, histology of the ileum (Fig. 1N), sigmoid (Fig. 1O) and rectum (Fig. 1P) showed massive and

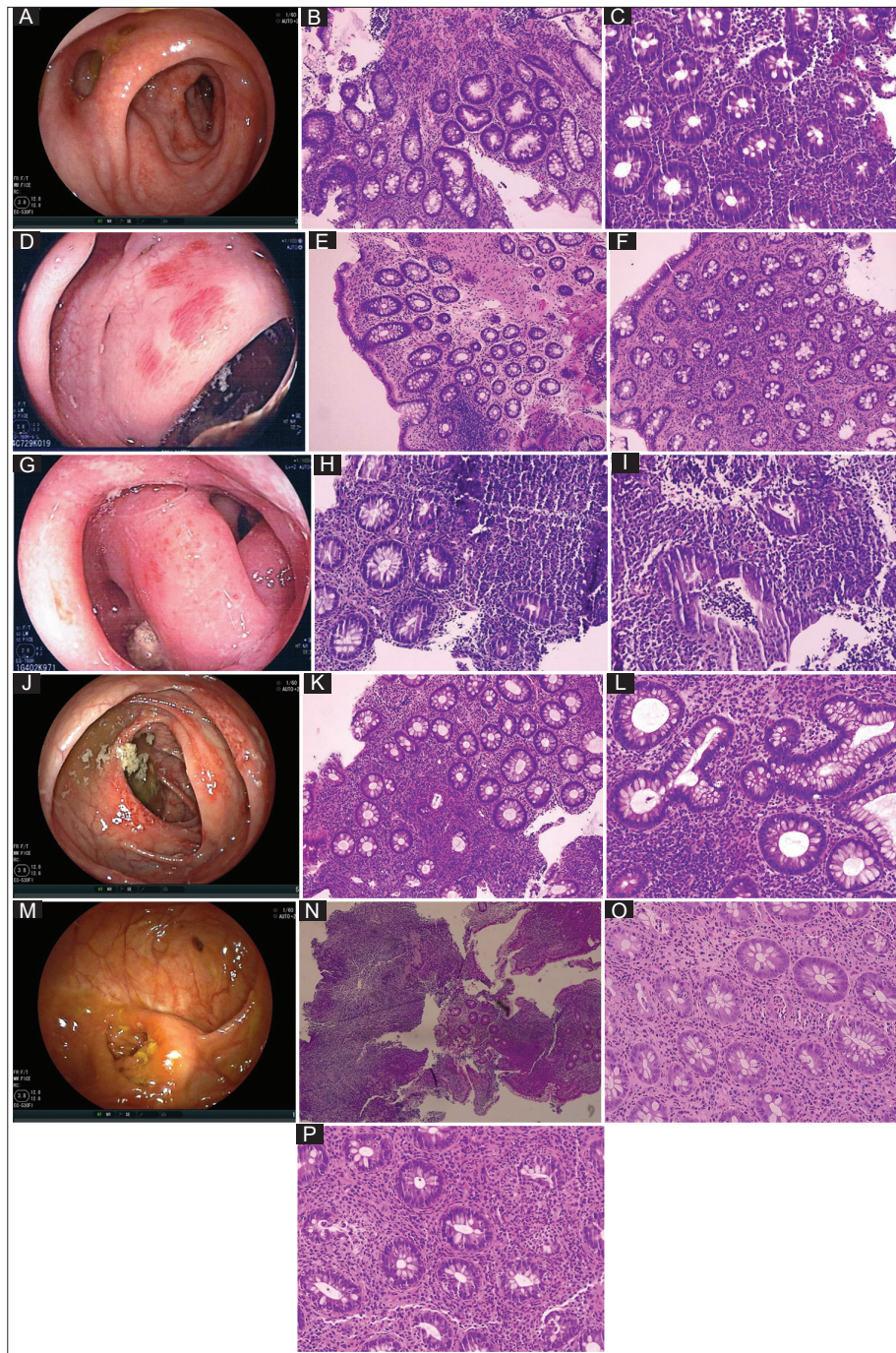


Figure 1 Endoscopic and histological findings of the reported patients

Patient 1. Red patches with erosions on the colonic folds and diverticular sparing in the sigmoid (A). At histology, mild active inflammation can be seen in the sigmoid (B) and in the rectum (C). The final diagnosis was iatrogenic colitis.

Patient 2. Red patches on the colonic folds and diverticular sparing can be seen in the sigmoid (D). At histology, chronic inflammation can be seen in the sigmoid (E); in the rectum (F), mild acute-chronic inflammation can be seen, with eosinophils and cryptitis. The final diagnosis was eosinophilic colitis.

Patient 3. Diffuse edema of the colonic folds and erosions in the sigmoid (G). Histology of the sigmoid (H) and of the rectum (I) shows diffuse and active inflammation, with cryptitis and cryptic abscesses, but without architectural changes. The final diagnosis was infectious colitis.

Patient 4. Hyperemia and erosions at the top of the colonic folds in the descending colon (J). Histology of the sigmoid (K) and rectum (L) showed active inflammation, without cryptitis, but with glandular distortion and mucin depletion. The final diagnosis was undetermined inflammatory bowel disease.

Patient 5. Isolated aphthous lesions in the interdiverticular mucosa at the passage between sigmoid and descending colon (M). Histology of the ileum showed massive infiltration with glandular destruction (N), while sigmoid (O) and rectum (P) showed active inflammation, with cryptitis and cryptic abscesses, without glandular distortion and/or mucin depletion. The final diagnosis was Crohn's disease of the ileum and distal colon

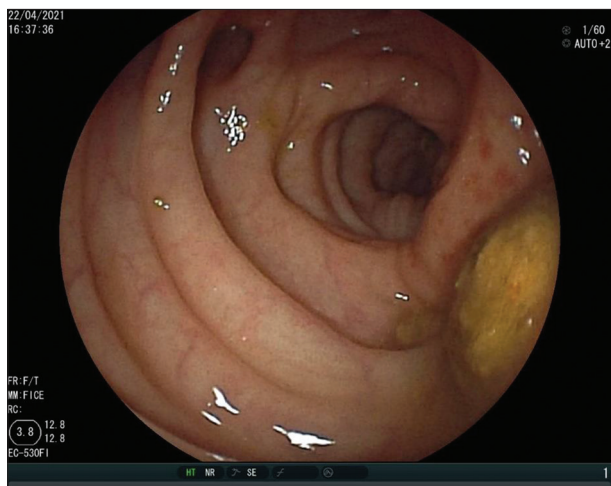


Figure 2 A. Small and isolated reddish lesions at the top of the colonic folds in the sigmoid detected during colonoscopy. These lesions are often mistakenly attributed to mild segmental colitis associated with diverticulosis (SCAD), such as SCAD type A. These are not SCAD lesions, but are non-specific lesions, often due to bowel cleansing or passage of the endoscope

active inflammation, transmural in the ileum, with cryptitis and cryptic abscesses, without glandular distortion and mucin depletion. The diagnosis of SCAD was therefore rejected. A final diagnosis of Crohn's disease of the terminal ileum and distal colon in a patient with diverticulosis was made, and the patient was successfully treated with budesonide by mouth and topical mesalazine.

Discussion

Although SCAD prevalence is estimated at around 2% of patients with diverticulosis [3-6], and although the diagnostic criteria are now well known [2,7], sometimes the endoscopic criteria are not applied correctly. For example, Fig. 2 shows a case of mild lesions often detected in sigmoid during colonoscopy and erroneously reported as SCAD lesions. In consequence, we may run the risk of over-diagnosing SCAD, and consequently its prevalence and treatment. This risk may also arise when endoscopic findings are adopted as single criteria, or when histology of the rectum is not performed, even in the absence of endoscopic signs of inflammation [10]. In fact, several other causes may mimic SCAD, ranging from inflammatory bowel diseases to infectious colitis, or to eosinophilic colitis. These last cases are of particular interest, because a wrong SCAD diagnosis could lead to incorrect treatment, with a real risk of exacerbating the clinical picture.

We would thus highlight the importance of both endoscopic and histology evaluation (together with laboratory exams, when necessary) before making a diagnosis of SCAD, because as these case series show, alternative diagnosis and treatments may be warranted.

Summary Box

What is already known:

- Segmental colitis associated with diverticulosis (SCAD) is a rare chronic disease involving the interdiverticular mucosa of the left colon with diverticular sparing
- Endoscopic and histology criteria have been described to support a diagnosis of SCAD
- Treatment is generally based on anti-inflammatory drugs

What the new findings are:

- Some diseases of the colon may mimic the endoscopic picture of SCAD
- Biopsy sampling of the ileo-colonic region (and laboratory examinations, when necessary) may indicate an alternative diagnosis
- Complete endoscopic evaluation and biopsy sampling are mandatory before making a diagnosis of SCAD, to avoid a mistaken diagnosis

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