

## Diverticulitis in the Urgent Care Setting

**Urgent message:** Abdominal pain due to acute diverticulitis is commonly seen in the urgent care setting. This is a clinical update on the management and treatment of acute diverticulitis.

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### Introduction

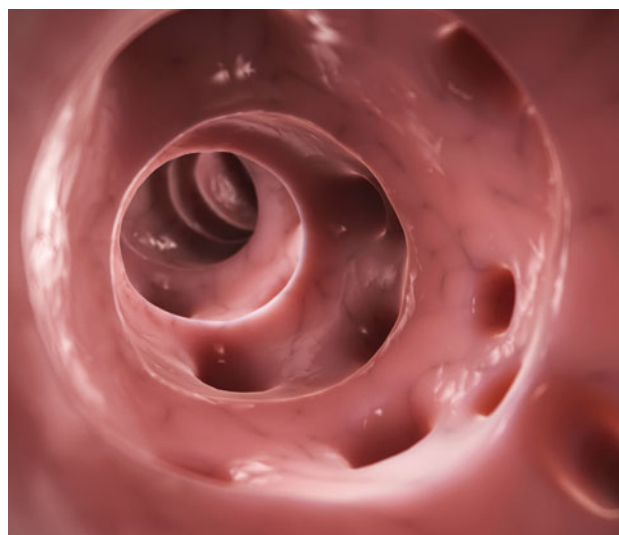
Abdominal pain commonly presents in the ambulatory setting, in anywhere from 1.5% to 8% of patients.<sup>1,2</sup> With diverticulitis being a common diagnosis in the presence of abdominal pain, the clinical challenge in an urgent care setting is determining uncomplicated from complicated diverticulitis.

### Diverticulosis

French pathologist Jean Cruveilhier described diverticulosis in 1849 as “bands of longitudinal muscle fibers in the sigmoid, a series of small, dark, pear-shaped tumors, which are formed by hernia of the mucous membrane through the gaps in the muscle coat.” Diverticula are described as outpouchings of mucosa and submucosa through the muscular layer of the colon (**Figure 1**) that arise in anatomic weaknesses within the bowel wall, such as areas where blood vessels penetrate into the wall.<sup>3</sup>

In the Western world, the prevalence of diverticulosis is thought to be approximately 30% to 40% of the population,<sup>4</sup> although that is likely an underestimate, because most patients have asymptomatic disease.<sup>3</sup> During colonoscopy, diverticulosis is the most commonly noted finding, seen in approximately 42.8% of all colonoscopies and up to 74.1% in patients older than 80 years.<sup>3</sup>

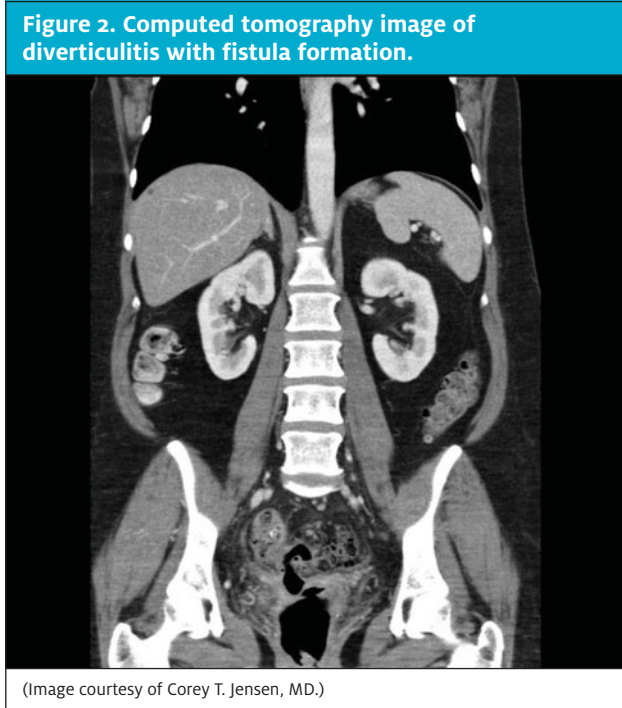
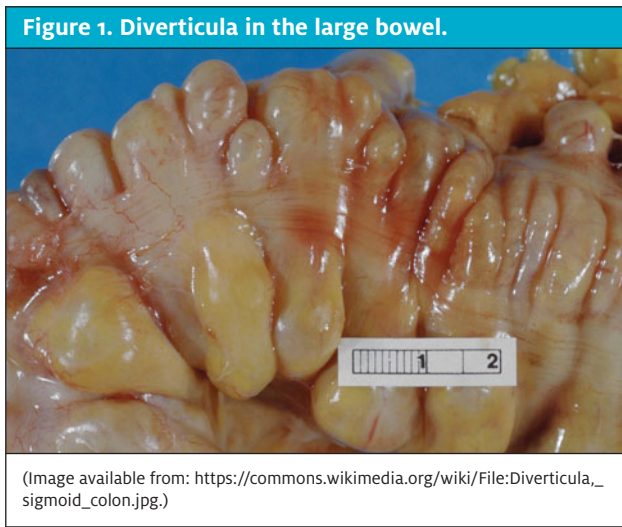
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### Diverticulitis

Up to a quarter of patients with diverticulosis develop diverticulitis.<sup>4</sup> The term *diverticulitis* means that a diverticulum has become inflamed and infected, resulting in microperforation. The most common presenting symptoms of acute diverticulitis include abdominal pain and fever.<sup>5</sup> Hospitalizations for diverticulitis represent 150,000 admissions and 24,000 elective surgical procedures per year in the United States. Multiple microbes, including both anaerobic and facultative bacteria, commonly contribute to the infectious etiology in diverticulitis. The most commonly suspected organisms are *Bacteroides*,



*Peptostreptococcus*, Enterobacteriaceae, viridans streptococci, and enterococci.<sup>4</sup> Diverticulitis is categorized as uncomplicated or complicated according to whether there is an abscess or fistula, obstruction, or free perforation.<sup>6</sup>

**Pathogenesis of Diverticulitis**

Until recently, the pathogenesis of diverticulitis was thought to be obstruction of the neck of the outpouching diverticulum with a fecalith, which subsequently causes overgrowth of bacteria, inflammation, and even-

tually perforation with inflammation to surrounding structures. Recently, however, researchers have postulated that a change in the microbiota causes an alteration in immunity of the mucosa and results in chronic inflammation. Local infections caused by microperforation that result in formation of a small abscess can often be contained. However, with larger abscesses secondary to macroperforation, more serious complications can ensue, including peritonitis, fistula formation, and systemic symptoms.<sup>4</sup>

**History of Present Illness**

When you suspect that a patient has diverticular disease, it is important to ask about the following:

- Dietary habits
- Systemic symptoms
- Significant comorbid conditions
- Immunocompromise
- Localization of pain, and any radiation
- Previous colonoscopy

**Physical Examination**

Common presenting symptoms of diverticulitis include the following<sup>7</sup>:

- Abdominal pain in the left lower quadrant, which is present in 93% to 100% of patients with the disease
- Fever, present in 57% to 100%
- Leukocytosis, present in 69% to 83%

These are additional signs to look for during examination<sup>4</sup>:

- Guarding
- Rebound tenderness in the left lower quadrant
- Tenderness in the suprapubic area
- Hypoactive versus normal bowel sounds
- Palpable abdominal mass
- Fecaluria or pneumaturia, with fistula formation from the colon to the bladder
- Feces or flatus through the vagina, with fistula formation from the colon to the vagina

The differential diagnosis for diverticulitis includes the following:

- Irritable bowel syndrome
- Inflammatory bowel disease
- Carcinoma of the colon
- Endometriosis
- Ischemic colitis
- Infections
- Lactose intolerance

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**Making the Diagnosis**

The diagnosis of diverticulitis is commonly made after clinical evaluation of presenting symptoms. Surprisingly, approximately half of the patients in whom the diagnosis of diverticulitis is made solely by clinical presentation do not actually have the disease and are later found to have different diseases.<sup>4</sup> Imaging studies aid in the diagnosis of diverticulitis and help categorize severity of disease. The American College of Radiology suggests computed tomography (CT) as the initial diagnostic imaging modality (Figure 2) for patients presenting with left lower quadrant or right lower quadrant abdominal pain.<sup>1</sup> Both CT and ultrasound are used to evaluate diverticulitis, but CT is preferred, especially because it has been shown to be highly sensitive (97%) and highly specific (100%)<sup>4</sup> (Table 1). However, ultrasound can rival the accuracy of CT when used by experienced operators. Conventional radiology has poor diagnostic value and is not recommended for evaluating potential causes of abdominal pain.<sup>2</sup>

**Treatment**

*Outpatient Therapy Versus Inpatient Therapy*

Outpatient treatment is recommended in the initial treatment for uncomplicated diverticulitis. It is also justifiable for diverticulitis with a peridiverticular abscess of <5 cm. Inpatient therapy for uncomplicated diverticulitis should be considered in patients who cannot tolerate oral hydration, who require narcotics, or whose condition does not improve despite outpatient therapy. Patients with complicated diverticulitis, such as the following, should be transferred to a hospital for treatment<sup>4</sup>: elderly patients, immunocompromised patients, and those with significant comorbidities, peritonitis, fistula, or large or distant abscess formation (Tables 2 and 3).

*Antibiotics*

The use of antibiotics in the treatment of acute divertic-

Table 1. Computed Tomography Findings in Diverticulitis	
Findings in the Abdomen or Pelvis	Percent in Diverticulitis
Pericolonic fat stranding	98
Diverticula	84
Bowel wall thickening	70
Phlegmon or abscess formation	35

Data from Sifri CD, Madoff LC. Diverticulitis and typhlitis. In: Bennett JE, Dolin R, Blaser MR, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 8th edition. Philadelphia, PA: Saunders; 2015:986–989.

Table 2. Red Flags in Diverticulitis
<ul style="list-style-type: none"> <li>• Systemic symptoms, signs of sepsis</li> <li>• Diffuse peritonitis</li> <li>• Immunocompromise</li> <li>• Significant comorbidities</li> <li>• Fistula: &gt;5 cm or distant abscess</li> </ul>

Data from Sifri CD, Madoff LC. Diverticulitis and typhlitis. In: Bennett JE, Dolin R, Blaser MR, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 8th edition. Philadelphia, PA: Saunders; 2015:986–989.

Table 3. Patients Who Require Inpatient Treatment
<ul style="list-style-type: none"> <li>• Those unable to tolerate oral hydration</li> <li>• Those who require narcotic analgesia</li> <li>• Those whose condition does not improve despite outpatient management</li> <li>• Those with complicated diverticulitis</li> </ul>

Data from Sifri CD, Madoff LC. Diverticulitis and typhlitis. In: Bennett JE, Dolin R, Blaser MR, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 8th edition. Philadelphia, PA: Saunders; 2015:986–989.

ulitis is currently being challenged. Theories about causes of diverticulitis now focus on inflammation rather than infection, bringing into question the benefit of antibiotic use. Recently, two randomized controlled trials and two systematic reviews of data on hospitalized patients with CT-diagnosed uncomplicated diverticulitis concluded that there was no clear benefit from antibiotic therapy. The studies focused solely on inpatient treatment of uncomplicated diverticulitis, and therefore their results cannot be generalized to the treatment of complicated diverticulitis or diverticulitis in the outpatient setting. Because of that limitation and the narrow population analyzed, the American Gastroenterological Association (AGA) recommends individualizing the use of antibiotics in select patients instead of routinely prescribing it in acute uncomplicated diverticulitis. Outpatient treatment

**Table 4. Outpatient Antibiotic Regimens (7–10 Days)**

- Ciprofloxacin, 500 mg orally twice a day, and metronidazole, 500 mg orally three times a day
- Amoxicillin-clavulanate, 875/125 mg orally twice a day
- Cephalexin, 500 mg orally twice a day, and metronidazole, 500 mg orally three times a day
- Trimethoprim-sulfamethoxazole orally four times a day, and metronidazole, 500 mg orally three times a day
- Clindamycin, 450 mg orally four times a day

Data from Stocchi L. Diverticulitis. In: McNally PR, ed. *GI/Liver Secrets Plus*. 5th ed. Philadelphia, PA: Elsevier; 2015:358–364.

of acute uncomplicated diverticulitis without the use of antibiotics has not been investigated.<sup>6</sup>

Patients with complicated diverticulitis should still receive antibiotics and inpatient treatment (Table 4). Such patients include those who are immunosuppressed, are pregnant, have signs of systemic inflammatory response syndrome or sepsis, or have significant comorbid disease.

### Recommended Follow-Up

Most patients with acute uncomplicated diverticulitis can follow up with their primary-care physician for monitoring of symptom resolution. If patients are prescribed antibiotics in an urgent care center, they should see their primary-care physician within 3 to 5 days. If their condition does not improve with conservative treatment or if symptoms worsen, they should follow up with their primary-care physician sooner or return to the urgent care center.

In addition, if there is concern about a possible underlying neoplasm not identified on CT images, a colonoscopy can be helpful in ruling out neoplasms. These patients should be referred to a gastroenterologist for colonoscopy. According to the AGA, a colonoscopy is recommended after an acute episode has resolved, to exclude underlying colorectal neoplasms. Colonoscopies are usually scheduled 6 to 8 weeks after an acute event, although optimal timing has not been established.<sup>6</sup>

Some patients may need consultation with a general surgeon for treatment of diverticulitis. The current standard of care recommends offering elective surgical resection to patients with more than two episodes of diverticulitis. In the past, surgical management was considered a reasonable treatment option. However, recent study findings have challenged this belief. The American Society of Colon and Rectal Surgeons suggest making

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the decision to use surgery on a case-by-case basis. It is important to weigh the risks and benefits of surgery and to keep in mind the possible complications, such as infections, anastomotic leak, and cardiovascular or thrombotic events.<sup>8</sup> Up to 10% of patients who undergo resection have complications.<sup>6</sup>

These are important factors to consider when referring a patient with diverticulitis to a gastroenterologist:

- The timing and completeness of prior colonoscopy
- Comorbidities
- Persistent symptoms of abdominal pain or diarrhea
- Patient preference

These are important factors to consider when referring a patient for surgery:

- A history of two or more episodes of diverticulitis (the current standard of care)
- A lack of improvement with conservative treatment
- Generalized peritonitis or severe systemic symptoms
- The presence of immunocompromise
- Uncontrolled bleeding (without spontaneous cessation after administration of 4–5 U of packed red blood cells)

### Prevention of Recurrent Acute Episodes

#### Nuts and Seeds

It has long been thought that intake of nuts and seeds provokes acute attacks of diverticulitis, but this is now being questioned. In 2008, approximately 47,000 U.S. men with diverticulosis were enrolled in an observational study that followed the subjects for 20 years. The study reported no increased risk of diverticulosis or complications in men who ingested nuts, popcorn, and seeds. Surprisingly, men who consumed either nuts or popcorn multiple times a week had a decreased risk for complications.<sup>9</sup> Outside of that large observational study, data regarding consumption of these items are scarce. Therefore, the AGA advises that it is not necessary for patients with diverticulitis to avoid nuts and popcorn.<sup>6</sup>

### Mesalamine

The AGA also addresses the use of mesalamine in the prevention of recurrence. Multiple randomized controlled trials have been conducted with the primary end point being patients free of diverticulitis recurrence.<sup>6</sup> Even though study results were conflicting, the majority of the studies did not find that mesalamine worked superiorly to placebo for preventing recurrence.<sup>10</sup> The AGA currently suggests not using mesalamine for prevention of recurrence.<sup>6</sup>

### Rifampin

Rifampin is not currently recommended for recurrence prevention. Multiple studies showed a decrease in recurrence but did not show statistical significance, and thus more research is needed.<sup>6</sup>

### Probiotics

Probiotics are not recommended by the AGA at this time. Small studies with probiotics did show a reduction in recurrence, but it was not statistically significant. Owing to changing theories regarding the etiology of diverticulitis and the role that the individual microbiome plays, further studies are needed to clarify the potential of probiotics.<sup>6</sup>

### High-Fiber Diet

It has long been implied that a high-fiber diet will prevent diverticulosis and episodes of diverticulitis, and therefore physicians commonly recommend such a diet.<sup>10</sup> Researchers who conducted an observational study of patients without known diverticular disease who had experienced their first episode of diverticulitis concluded that a high-fiber diet reduced the risk of recurrence. The AGA also references one small study that showed reductions in complications and surgery in patients with a high-fiber diet. Although the data are insubstantial for proving high fiber intake to be beneficial, the AGA does not believe that fiber intake poses any risks, and it therefore suggests fiber intake for patients with a history of diverticular disease. It is important to discuss the adverse effects of increased fiber intake, such as abdominal bloating, with patients.<sup>6</sup>

### Physical Activity

Vigorous activity should be considered as a possible pre-

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ventative for recurrence. An observational study of approximately 47,000 men showed a decreased risk of recurrence in those with vigorous activity levels.<sup>6</sup>

### Nonsteroidal Anti-inflammatory Drugs

The AGA suggests avoiding use of nonsteroidal anti-inflammatory drugs (NSAIDs) in patients with previous episodes of diverticulitis. This evidence is extrapolated from observational studies that showed an increased risk of occurrence. However, even though aspirin is an NSAID, the AGA recommends against advising patients to avoid its use, because the added benefit of aspirin use is greater than the risk of a diverticular episode.<sup>6</sup>

### Conclusion

Diverticulitis is a common cause of abdominal pain that presents in urgent care facilities. Much of the current treatment of diverticulitis is in flux, being under study, and thus AGA guidelines are conditional and based on current low-quality evidence. Additional research is necessary to provide evidence for the practices we follow. The current recommendation is to treat acute uncomplicated diverticulitis in an outpatient setting. Patients with complicated diverticulitis, including those with significant comorbidities, immunosuppression, or peritoneal signs, and those with evidence of fistula, abscess, or perforation, should be transferred to a hospital for treatment. ■

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