

# *Clostridium difficile* Colitis Presenting as an Acute Abdomen: Case Report and Review of the Literature

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Pseudomembranous colitis associated with *Clostridium difficile* rarely manifests as an acute abdomen and even more rarely as an acute abdomen without abnormal radiologic studies.

The following is a case report of a 52-year-old white man who had an acute abdomen without abnormal radiologic studies, and was given a final diagnosis of *C difficile* colitis. Surgery was averted only by the ability to do an expeditious flexible sigmoidoscopy with the visualization of pseudomembranes. Diagnosis was later confirmed by a positive toxin assay and culture of *C difficile*. Treatment for *C difficile* colitis is usually medical, with oral vancomycin the preferred agent. Surgery may be needed when there is an acute abdomen with other systemic signs (fever or leukocytosis) or abnormal radiologic studies.

**KEY WORDS.** Enterocolitis, pseudomembranous; *Clostridium difficile*; acute abdomen. (*J Fam Pract* 1997; 44:97-100)

Pseudomembranous colitis associated with *Clostridium difficile* is an entity characterized typically by severe diarrhea during or after treatment with antibiotics, with symptoms ranging from mild diarrhea to colitis with toxic megacolon.<sup>1</sup> Diagnosis depends on the culture of *C difficile* or finding its toxin in the stool of symptomatic patients, and characteristic findings on endoscopy, consisting of pseudomembranous nodules or plaques, superficial erosions, and erythematous lesions.<sup>2,3</sup>

Pseudomembranous colitis associated with *C difficile* rarely occurs as an acute abdomen. A search of the English-language medical literature was performed using MEDLINE, 1985-1995. A secondary search of the references cited in the accessed articles was also performed. Only 29 other cases of either pseudomembranous colitis or *C difficile* diarrhea with an acute abdomen were found in the literature; none of these were in the Family Medicine literature. Of these 29 cases, most had either a toxic megacolon or abnormal radiologic studies.

We present the case of a 52-year-old man with pseudomembranous colitis associated with *C difficile* who had an acute abdomen, but without a toxic

megacolon or abnormal radiologic studies. The purpose is to alert family physicians to this unusual presentation of a more common disease and to review the treatment of this disease presentation.

## CASE REPORT

A 52-year-old white man was admitted to the Family Practice Service for abdominal pain. The pain had begun 3 days before admission and increased until the day of admission. The pain, aching and burning in nature, began in the epigastrium but had become diffuse. Pain was worsened by sitting or rolling, was relieved in the supine position, and was not affected by food or antacids. The patient had no nausea or vomiting, but had two episodes of watery stools on the day before admission.

The patient had a long history of both tobacco and alcohol abuse. He had been admitted to our service 4 weeks before for alcohol detoxification and incision and drainage of a submental abscess. While hospitalized, he had been treated with intravenous antibiotics and was discharged to complete a 14-day course of oral antibiotics. He had complained of some diarrhea during hospitalization, but it had resolved before discharge; a workup that included a *C difficile* toxin assay and culture was negative.

A physical examination revealed predominantly normal findings except for a temperature of 38.6°C and an abnormal abdomen. It was slightly distended,

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## FIGURE

Pseudomembranous colitis can be seen on endoscopy as small, discrete, yellow-white plaques.



nontympanic, and diffusely tender. There were mild rebound, diffuse involuntary guarding, and mild peritoneal signs. The liver was tender and was percussed to 3 cm below the right costal margin. There were no other masses or organomegaly. The rectal examination was normal, but with guaiac-positive stool.

Laboratory examination revealed normal urine, hemoglobin, hematocrit, chemistry-20 profile, chest radiograph, flat plate and upright radiographs of the abdomen, and computed tomographic (CT) scan of the abdomen. Abnormal findings were a white cell count of  $13,400/\text{mm}^3$  with a left shift, a sedimentation rate of 82 mm/h, an international normalized ratio of clotting of 1.34, an albumin of 2.9 g/dL, an alkaline phosphatase of 138 U/L, total bilirubin of 1.6 mg/dL, aspartate aminotransferase (AST) of 55 U/L, magnesium of 1.3 mEq/L, an amylase of 138 U/L, and few leukocytes in the stool. The CT scan of the abdomen was unrevealing. The only abnormalities were homogeneous enhancement of the liver, with no focal lesions; increased densities in the region of the celiac axis consistent with an increased number of normal sized lymph nodes; and nonspecific streaky densities in the peritoneal fat and the left

perinephric fascia. There was no abnormal fluid collection and no toxic megacolon.

Intravenous cefuroxime was administered on the day of admission. His white cell count gradually came down to  $9900/\text{mm}^3$ , and his liver function levels also decreased: an alkaline phosphatase of 116 U/L, total bilirubin of 1.6 mg/dL, and AST of 46 U/L, but he continued to have severe abdominal pain.

Because of the acute abdominal examination, a surgery consultation was obtained and the surgeon agreed with the findings of a mildly acute abdomen. He also noted an incarcerated, but not strangulated, ventral hernia. An incarcerated hernia is an irreducible hernia and is not a surgical emergency. A strangulated hernia occurs when a portion of bowel loses its circulatory support within the hernial sac and becomes necrotic, a surgical emergency. Before taking the patient to surgery, all agreed that a flexible sigmoidoscopy should be done. This revealed findings typical for pseudomembranous colitis (Figure).

Surgery was canceled and the patient was started on oral vancomycin and intravenous metronidazole. Over the next 3 days, his symptoms resolved, and he was discharged home and completed the course of oral antibiotics. During his hospitalization, several other pertinent laboratory tests were returned: normal serum lipase, a hepatitis screen positive for old hepatitis C infection, stool negative for *Salmonella*, *Shigella*, *Campylobacter*; and ova and parasites, and a positive *C difficile* toxin assay and culture. It was felt that his liver tenderness was due to his alcoholic liver disease.

The patient has now been followed for 9 months without recurrence of problems.

## DISCUSSION

In most cases of pseudomembranous colitis associated with *C difficile*, there is profuse, watery, foul-smelling, or bloody diarrhea and cramping abdominal pain. These patients have recently received, or still are receiving, some form of antibiotic therapy.<sup>2,4,5</sup> *C difficile* is a gram-positive, spore-forming, anaerobic bacillus, found only in 3% to 5% of healthy adults.<sup>2,4</sup>

The workup of a patient with diarrhea associated with antibiotic use may include abdominal radiographs, ultrasound, CT scan of the abdomen, stool cultures, stool tests for ova and parasites and toxin, and endoscopy.<sup>2</sup>



Plain upright abdominal films can demonstrate the degree of colonic dilatation and the presence or absence of intraabdominal air,<sup>2</sup> air-fluid levels, and subserosal air, suggesting invasion of the bowel wall and possibly requiring surgical intervention.<sup>1,2,6</sup> Toxic megacolon can also be seen on plain radiographs.<sup>7,9</sup> Computed tomography of the abdomen sometimes reveals an "accordion pattern": broad transverse bands of closely spaced haustral fold edema. This has not been described in other colitic diseases.<sup>10</sup>

Endoscopy can reveal superficial erosions, erythematous lesions, and pseudomembranous nodules or plaques, which are small, discrete, and yellow-white (Figure).<sup>2</sup> The mucosa may appear inflamed, friable, granular, or hemorrhagic, but without pseudomembranes.<sup>4</sup> When there are no pseudomembranes, a biopsy is helpful and may provide the diagnosis.<sup>2</sup> Endoscopy is dangerous if colonic dilatation is seen on plain radiographs.<sup>2</sup>

The cytotoxin of *C difficile* is present in 90% to 100% of patients with pseudomembranous colitis, and in 50% to 75% of those with antibiotic-associated colitis without pseudomembranes.<sup>2</sup> Fifteen to 25% percent of patients with antibiotic-associated diarrhea without colitis also have cytotoxin in their stool.<sup>2</sup> The fecal white count might also be elevated.<sup>1</sup> *C difficile* produces two toxins, A and B. Both toxins are assayed, by ELISA, as almost all *C difficile* produces both or neither toxin.<sup>3</sup> The toxins are heat-labile and must be refrigerated or packed in ice when transported.<sup>2</sup> Culture and a latex agglutination test may also be used as diagnostic tests; however, the sensitivity and specificity vary widely.

An appropriate method to diagnose *C difficile* is to test for toxins in watery or loose stool and to culture the stool. If the toxin assay is negative, and the culture grows *C difficile*, this culture should be tested for toxins A and B, because the toxins produce the symptoms. *C difficile* that does not produce toxins does not cause disease. Measurement of the toxin and cultures, combined with the clinical history and physical examination, assures a sensitivity from 67% to 100%.<sup>2,3</sup> It is important that only watery or loose stool be sent for assay, as evaluation of a formed stool will lead to a high false-positive rate. The high false-positive rate occurs because of the many people without the disease who carry the organism in the hospital setting. A Gram stain of the stool has no proven value in the diagnosis of *C difficile* disease.

The causative antibiotic should be discontinued or changed.<sup>4</sup> Fluid and electrolyte replacement should be instituted as necessary. Drug therapy consists of oral vancomycin 125 mg four times a day for 7 to 10 days, by means of a nasogastric tube if necessary. Vancomycin is given in this manner to ensure an adequate concentration of the drug within the intestinal lumen. Metronidazole 250 mg four times a day for 7 to 10 days is an alternative therapy<sup>2</sup>; however, some metronidazole-resistant strains of *C difficile* have been identified.<sup>2,4</sup> Metronidazole should not be used in children or pregnant women.<sup>2</sup> These factors make vancomycin a better choice, despite its expense. Both vancomycin and metronidazole may be given concurrently.<sup>1,7,11</sup> There is some controversy regarding the use of vancomycin because of the reported increase in vancomycin-resistant enterococci.<sup>12</sup> Oral bacitracin may also provide an adequate response.<sup>4,11</sup> Decompression of the colon by means of rectal tube or endoscopy is important in toxic megacolon, and is an alternative to surgery.<sup>1</sup> Antiperistaltic agents are contraindicated, as they lead to prolonged illness and development of complications, especially in older patients.

Recurrences occur in 10% to 20% of patients. Most respond to a second course of vancomycin or metronidazole.<sup>2,4</sup> Prolonged medical therapy, up to 6 weeks, may occasionally be required.<sup>4</sup>

Surgical management is indicated when there are signs of peritonitis, even if the only finding at laparotomy is colonic edema.<sup>13</sup> Surgery is also indicated if diagnostic radiography indicates subserosal air or toxic megacolon that cannot be managed medically.<sup>1,2,6,9</sup> One study, by Morris and colleagues,<sup>13</sup> recommended surgery for patients with signs of peritonitis or diffuse abdominal pain with rebound and guarding, and found good results from surgery in such cases and poor results from medical therapy only. Our patient, however, did well with medical treatment alone. It is difficult to draw comparisons, but our patient appears to have had a lower temperature and white blood cell count and shorter duration of diarrhea than the cases reported by Morris et al. Most of the patients of the latter also had abnormal radiologic studies. Perhaps our case illustrates that more than just a mildly acute abdomen is necessary for medical therapy to fail in pseudomembranous colitis associated with *C difficile*. It may be that at least an abnormal radiologic study or other systemic signs of disease (fever or leukocytosis) point to sur-



gical instead of medical treatment.

Our case is unusual in that the patient had an acute abdomen and diarrhea as symptoms of the disorder, but did not have toxic megacolon or abnormal radiographs. The CT scan was not helpful in making the diagnosis, giving no indication that the problem was in the bowel. From the literature, 29 cases of what was called either pseudomembranous colitis or *C difficile* diarrhea with acute abdomen as their presenting symptom were reviewed. Megacolon was seen in only 8 of the cases reviewed. Of the 29 cases, 27 had some radiologic abnormality, including small and large bowel dilatation, air-fluid levels, irregular thickening of the colonic outline, wall edema, thumbprinting (thickening of the bowel wall), and a mass.

The case presented here illustrates the importance of considering pseudomembranous colitis in someone who has an acute abdomen with diarrhea, even in the absence of abnormal radiographic findings. Diagnosis was not unusual in the use of endoscopy and then stool for culture and toxin assay of *C difficile*. Management was successful with a medical regimen; and surgery was not needed. Both pseudomembranous colitis and diarrhea associated with *C difficile* are common diseases. The case presented here illustrates the maxim that unusual presentations of common diseases are more common than the usual presentation of uncommon diseases.

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