

CLINICAL VIGNETTE

Ischemic Colitis Masquerading as Pseudomembranous Colitis

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Case Report

A 73-year-old male with a history of atrial fibrillation and peripheral vascular disease was admitted to the hospital from an outpatient surgery center following an elective lower extremity angiogram. The angiogram was complicated by left external iliac rupture and bilateral iliac artery occlusion. The rupture resulted in significant retroperitoneal bleeding with a corresponding decrease in hemoglobin from 15 to 4.6 g/dL, severe hemorrhagic shock with systolic blood pressure in the 60s mmHg, and lactic acidosis. The patient was taken to the operating room for repair and required significant transfusion support.

Four days after surgery, the patient developed frequent, non-bloody diarrhea, abdominal distention and pain, and leukocytosis. Intravenous metronidazole and oral vancomycin was started for empiric treatment of *Clostridium difficile* colitis, but initial *C. difficile* A and B toxin PCR-based detection assays eventually returned negative. A CT scan of the abdomen revealed narrowing of the sigmoid colon. The patient underwent flexible sigmoidoscopy with the sigmoid mucosa covered with plaque-like adherent tissue characteristic of pseudomembranous (*C. difficile*) colitis with additional areas of necrotic tissue (Figure 1). Biopsies were taken and pathology review confirmed severe pseudomembranous colitis in both sigmoid and rectal samples.

There was a strong suspicion that the initial *C. difficile* toxin test was falsely negative because of the pathognomonic finding of pseudomembranous colitis on biopsy. Intravenous metronidazole and oral vancomycin were therefore continued for treatment of suspected *C. difficile* colitis despite the negative initial *C. difficile* toxin test. *C. difficile* toxin PCR-based assays were repeated four additional times and all of them returned negative. For further confirmation, a *C. difficile* stool cytotoxin B tissue culture assay – the traditional gold standard for diagnosis – was performed and returned negative. Despite continued antimicrobial treatment over the course of one month, the patient's diarrhea persisted. Physical examination and serial abdominal imaging also revealed worsening colonic obstruction and dilatation over this time. Repeat CT imaging of the

abdomen showed diffuse colonic distention (cecal diameter 9.2-cm), colonic wall thickening, and inflammatory changes suggestive of diffuse infectious or ischemic colitis. Repeat sigmoidoscopy revealed an 8-cm tight stricture with friable mucosa appearing more ischemic in nature compared to the initial endoscopic findings (Figure 2).

Intravenous metronidazole and oral vancomycin were discontinued and a colonic stent was placed across the area of stricture. Shortly after, the patient's symptoms and physical examination improved. Repeat imaging confirmed resolution of the obstruction. The ischemic colitis was attributed to hemorrhagic shock in the context of likely mesenteric artery disease.

Discussion

Ischemic colitis most commonly results from occlusion of either the superior or inferior mesenteric arteries, but it can also result from hypoperfusion or vasospasm of these arteries¹. This patient with atrial fibrillation, peripheral vascular disease, and massive hemorrhage had risk factors for both occlusion and hypoperfusion. The left colon is most commonly affected, specifically the watershed areas of the splenic flexure and rectosigmoid junction².

Signs and symptoms of ischemic colitis can progress through three classically described phases, each increasing in severity – the hyperactive phase, the paralytic phase, and the shock phase. The *hyperactive phase* is characterized by pain localized to the region of ischemic injury, diarrhea, and hematochezia. The *paralytic phase* is obstructive in nature, presenting with diffuse pain, distension, and loss of bowel sounds. The *shock phase* is the most severe phase and is characterized by loss of mucosal integrity and spillage of colonic contents into the abdomen. Most patients present in the hyperactive phase and rarely progress to the later phases. Ischemic strictures can occur with ischemia of even moderate severity³. Diagnosis requires clinical suspicion based on risk factors such as age greater than 60, history of cardiovascular disease, lower

abdominal pain, and antecedent hemorrhage or aortoiliac surgery.

Given the frequent difficulty of distinguishing infectious from ischemic colitis, colonoscopy is often needed to confirm the diagnosis. Common features of ischemic colitis on colonoscopy include darkened or pale mucosa, segmental involvement, and petechial bleeding. This patient's clinical and diagnostic course emphasizes the rare, but possible, endoscopic finding of pseudomembranes in ischemic large bowel in the absence of an active *C. difficile* infection. Pseudomembranes are 1-5-mm plaques which are beige or yellow in color that traditionally have been strongly associated with the diagnosis of *C. difficile* colitis. They are caused by mucosal necrosis, usually from bacterial toxins. However, in the case of ischemic colitis, pseudomembranes can also be caused by hypoperfusion. One study with a small sample size attempted to differentiate classic *C. difficile*-induced pseudomembranous colitis from the pseudomembranes rarely observed in ischemic colitis. Findings supportive of ischemic colitis included visualizing polyps or thumbprint morphology and the finding of a hyalinized lamina propria on biopsy^{4,5}.

This case underscores that while *C. difficile* has become a common and problematic source of inpatient diarrhea and colitis, clinicians must be aware of other less common etiologies that can arise in an acutely ill patient. Difficult cases like this one – in which the clinical features of more than one entity overlap – highlight the need to synthesize data from different sources including history, physical examination, colonoscopy, pathology, and microbiology.

Additionally, this case supports the utility of modern *C. difficile* stool diagnostics. Until the recent proliferation of rapid *C. difficile* stool diagnostics, pseudomembranes on endoscopy were pathognomonic for *C. difficile* colitis and empiric treatment based on this finding alone was common. The new current standard for accurate and rapid diagnosis of *C. difficile* infections is PCR testing for *C. difficile* toxin A or B genes⁶. The sensitivity and specificity of this method is roughly 95% compared to anaerobic culture, which is an impractical diagnostic tool for regular clinical practice⁷. The above case serves as a reminder of the sensitivity of the modern *C. difficile* stool PCR toxin test and the need to avoid ongoing antibiotic therapy for *C. difficile* in patients with negative stool assay results.

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FIGURE 1



FIGURE 2

