



## Cytomegalovirus Infection as a Cause of Pseudomembranous Colitis

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### Background

Cytomegalovirus colitis is most commonly diagnosed in immunocompromised patients, though it has been recognized in immunocompetent hosts as a cause for acute diarrheal illness. (1) CMV gastrointestinal disease rarely occurs in immunocompetent patients and could resolve completely without the use of antiviral drugs. (2) CMV colitis is increasingly recognized in apparently immunocompetent patients in some immunomodulating conditions, such as elderly, pregnancy, chronic renal failure, coronary artery disease, ischemic heart disease, congestive heart failure, diabetes mellitus, steroid use, blood transfusion, and prolonged stay in the intensive care units (ICUs). (3-5) In addition to manifesting with a solitary ulcer, multiple ulcers, diffuse colitis, and polypoid lesions, occasionally CMV colitis may present with pseudomembranes, leading to misdiagnosis as CDI-associated pseudomembranous colitis. (6,7) In a review of 31 patients with CMV colitis by Wilcox et al. pseudomembrane formation was the clinical presentation in 2% of the patients. (8) This scenario should be considered particularly when C. difficile toxin assays or cultures are negative. (9,10)

We report a case of Cytomegalovirus (CMV) infection in an immunocompetent patient presenting as pseudomembranous colitis. Due to rarity in healthy patients, CMV colitis is often initially overlooked but should be considered especially in elderly patients with refractory diarrhea.

### Case Summary

An 80-year-old man with a case of Alzheimer's disease on mirtazapine was admitted with abdominal pain and distention, the abdomen was distended, tense and tender. He was given a diagnosis of acute large bowel pseudo-obstruction (Ogilvie syndrome) based on abdominal x-ray and CT-scan findings (**figure 1, 2**). He was treated conservatively with correction of his electrolytes and rectal tube insertion.

The abdominal pain and distension were improved but he started to develop diarrhea, stool studies were consistently negative for ova, parasites, and *C. difficile*. The patient underwent a flexible sigmoidoscopy that revealed pseudomembranous colitis (**figure 3**) biopsies revealed necrotic tissue mixed with blood, fibrin and inflammatory cells containing many macrophages and no evidence of specific organisms using special stains (**figure 4**).

The patient was treated with antibiotics including intravenous metronidazole and oral vancomycin.

There was no improvement in his symptoms after 1 week of treatment and he started to develop bloody diarrhea, repeat sigmoidoscopy showed partial resolution of pseudomembranes with the presence of multiple variable size ulcers seen in the rectum and sigmoid colon and repeated biopsies revealed cytomegalovirus induced inflammatory reaction with ulceration and granulation tissue formation (**figure 5**). Serum CMV DNA 4599 IU/mL.

The patient was immediately started on intravenous ganciclovir and his diarrhea resolved. Although CMV is a rare colonic pathogen in the immunocompetent patient, it should be considered in the differential diagnosis of pseudomembranous colitis in such patients.

### Discussion

Pseudomembranous colitis has been characteristically associated with *C. difficile* infection. (11-13)

Thus, it has been the standard medical practice to treat patients in whom pseudomembranes are seen on endoscopy for *C. difficile* colitis.

However, pseudomembranous colitis has been associated with other etiologies, including shigellosis, (14-16) *Escherichia coli*, (17-19) fungal infections, (20) and ischemia. (21,22) Cytomegalovirus colitis has also been associated with pseudomembrane formation. (8,23-28)

CMV colonization is common in the general population. It is prevalent in 40–100% of adults by the age of 30 years and approximately 70% of the population over the age of 60 years. (29,30)

The mechanism of injury and pseudomembrane formation in CMV colitis might be similar to that of ischemic colitis. The inflammatory changes in CMV are usually neutrophilic and usually affect endothelial cells. The endothelial cells usually contain owl-eyed nuclear or granular cytoplasmic inclusions. Because of this vascular involvement, it has been postulated that ischemia may play a contributory role in the pathogenesis of CMV and that this, in turn, may contribute to ulcer and pseudomembrane formation as seen in ischemic colitis.

With a non-specific presentation, the clinician must have a high index of suspicion to diagnose CMV colitis, particularly in the immunocompetent host. The estimated rate for colectomy in patients with CMV colitis is 20–30% and is higher for patients with a delayed diagnosis and treatment. (31) Therefore, we emphasize that CMV colitis is another important diagnostic consideration that should be considered, especially in the immunocompetent population who present with diarrhea and pseudo membranes.



Figure 1: Plain abdominal x-ray showing dilated large bowel loops without mechanical obstruction.



Figure 2: Abdominal CT-scan showing dilated large bowel loops without mechanical obstruction



Figure 3: Flexible sigmoidoscopy showing pseudomembranous colitis

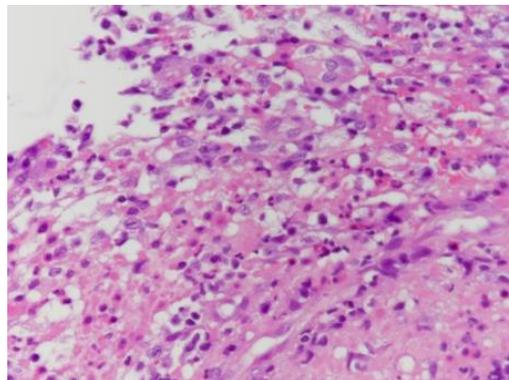


Figure 4. H & E stain showing necrotic tissue mixed with blood, fibrin and inflammatory cells

containing many macrophages

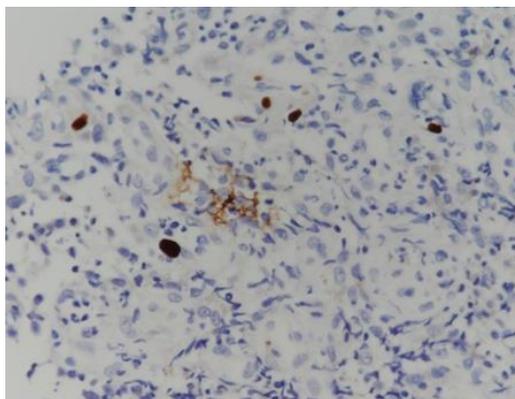


Figure 5. Histology showing IHC for CMV Antibody with positive nuclear staining

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