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**Coexisting cytomegalovirus colitis in an immunocompetent patient with
Clostridioides difficile colitis: A case report**

Kim *et al.* CMV colitis in *Clostridioides difficile* colitis

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Abstract

BACKGROUND

Clostridioides difficile colitis (CDI) is one of the most common infections in hospitalized patients, characterized by fever and diarrhea. It usually improves after appropriate antibiotic treatment; if not, comorbidities should be considered. Cytomegalovirus (CMV) colitis is a possible co-existing diagnosis in patients with CDI with poor treatment response. However, compared with immunocompromised patients, CMV colitis in immunocompetent patients is not well studied.

CASE SUMMARY

We present an unusual case of co-existing CMV colitis in an immunocompetent patient with CDI. An 80-year-old female patient was referred to the infectious disease department due to diarrhea, abdominal discomfort, and fever for 1 wk during her hospitalization for surgery. *Clostridioides difficile* toxin B PCR on stool samples was positive. After CDI was diagnosed, oral vancomycin treatment was administered. Her symptoms including diarrhea, fever and abdominal discomfort improved for ten days. Unfortunately, the symptoms worsened again with bloody diarrhea and fever. Therefore, a sigmoidoscopy was performed for evaluation, showing a longitudinal ulcer on the sigmoid colon. Endoscopic biopsy confirmed CMV colitis, and the clinical symptoms improved after using ganciclovir.

CONCLUSION

Co-existing CMV colitis should be considered in patients with aggravated CDI on appropriate treatment, even in immunocompetent hosts.

Key Words: Cytomegalovirus; *Clostridioides difficile*; Coinfection; Colitis; Immunocompetent; Case report

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Core Tip: Cytomegalovirus (CMV) colitis is rare in immunocompetent patients, but colitis is the main clinical manifestation. The *Clostridioides difficile* infection (CDI) and CMV colitis symptoms might be indistinguishable clinically. Therefore, it is difficult to consider their co-existence in patients suspected of CDI. If a patient treated with CDI does not show clinical improvement, the possibility of co-existing CMV colitis should be considered as one of the differential diagnoses. Sigmoidoscopy with biopsy is crucial in diagnosing co-existing CMV and CDI colitis.

INTRODUCTION

Cytomegalovirus (CMV) is a member of the herpesvirus family and forms latent infection after the resolution of the primary infection^[1]. CMV primary infection can cause mononucleosis-like symptoms in immunocompetent adults^[1]. After the primary CMV infection, CMV remains in host cells and CMV replication is controlled by the immune system in immunocompetent patients^[1]. Immunodeficiency is the leading risk factor for invasive CMV diseases^[2]. Invasive CMV diseases can occur in immunocompromised patients, including transplant recipients or patients with HIV, by primary infection or reactivation and could have significant morbidity and mortality^[3]. This mostly affects the gastrointestinal tract, comprising 30% of tissue-invasive CMV diseases in immunocompromised patients^[4]. Clinical manifestation of CMV colitis in immunocompromised patients varies and depends on the site of involvement which could cause odynophagia, abdominal pain, hematochezia, and fever^[4].

CMV colitis in immunocompetent patients was previously considered very rare. However, there has been an increasing number of case reports in immunocompetent patients^[5,6]. The Symptoms of CMV colitis in immunocompetent patients also present odynophagia, abdominal pain, hematochezia, and fever^[5,6]. However, its epidemiology,

clinical features, and outcomes in immunocompetent patients are not completely understood^[4-8].

Clostridioides difficile colitis (CDI) is a cause of diarrhea in hospitalized patients and is one of the most common causes of nosocomial infections^[9]. CDI is usually suspected when hospitalized patients develop diarrhea and fever^[9]. CMV colitis symptoms are clinically indistinguishable from those of CDI. Therefore, if the immunocompromised status of patients who develop CDI does not improve even with appropriate treatment, accompanying CMV colitis should be considered. However, this may not be considered in immunocompromised patients because cases of co-existing CDI and CMV colitis are rare in immunocompetent patients. We report an unusual case of CMV colitis in an immunocompetent CDI patient with literature review.

CASE PRESENTATION

Chief complaints

An 80-year-old female patient was referred for an infectious disease (ID) consult due to diarrhea, abdominal discomfort, and fever for 1 wk during her rehabilitation treatment after spinal stenosis surgery.

History of present illness

She underwent spinal stenosis surgery three weeks ago for back pain. She took methylprednisolone 250 mg per day for a week from the time of surgery due to paralysis of the lower extremities associated with spinal stenosis. She was treated with piperacillin/tazobactam for 7 days and cefixime for 4 days for a urinary tract infection before ID consultation. She had diarrhea, abdominal discomfort, and fever for 1 wk. *Clostridioides difficile* toxin A, B polymerase chain reaction (PCR) tests were performed on stool samples. *Clostridioides difficile* toxin B PCR was positive. Computed tomography (CT) of the abdomen/pelvis showed diffuse wall thickening in the rectum with mild perirectal infiltration in the upstream colon. The patient was treated with oral

vancomycin 250mg every 6 h for 10 days, after which fever and diarrhea improved for ten days. However, the symptoms worsened again with bloody diarrhea and fever.

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History of past illness

She had a medical history of hypertension and diabetes.

Personal and family history

The patient had no family history.

Physical examination

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Vital signs were a temperature of 37.8 °C, blood pressure of 110/60 mmHg, pulse rate of 84 beats/min, respiratory rate of 18 breaths/min on the consultation day. The patient's GCS score was 15. She had hyperactive bowel sounds, no tenderness or rebound tenderness, no abdominal distension.

Laboratory examinations

On the consultation day, laboratory evaluation revealed anemia (Hb = 9.5 g/dL), an increased level of C-reactive protein (CRP, 7.3 mg/dL), and an increased erythrocyte sedimentation rate (ESR, 61 mm/h) with a normal white blood cell counts of 9,730 cell/mm³ (neutrophils = 80%, lymphocyte = 15%). Stool culture for *Salmonella* spp., *Shigella* spp., *Campylobacter* spp., and *Escherichia coli* O-157:H7 was negative. In routine stool examination, there is no helminth or protozoa, and stool white blood cell counts are 1~5 cell/high power field.

Imaging examinations

Flexible sigmoidoscopy showed a longitudinal ulcer from the anal verge (AV) to 12 cm above the AV (Figure 1).

FINAL DIAGNOSIS

Co-existing CMV colitis with *Clostridioides difficile* colitis

TREATMENT

Antiviral treatment with intravenous ganciclovir (10 mg/kg/day) was initiated. Fever and bloody diarrhea improved after 5 days of using ganciclovir, and the treatment was continued for 3 wk.

OUTCOME AND FOLLOW-UP

A sigmoidoscopy performed after the treatment showed an improvement in the ulcer lesion, and a biopsy performed 1 mo after the treatment showed negative findings. The patient was discharged to a nursing home after successful treatment with improved symptoms.

DISCUSSION

Although CMV infection in immunocompetent hosts has been considered rare, one review article retrieved 89 articles reporting on severe CMV infection in immunocompetent adults from 1950 to 2007^[10]. They were mainly gastrointestinal and central nervous system diseases. Symptoms of CMV infection in immunocompetent patients are not well documented; however, severe life-threatening CMV infections in immunocompetent hosts might not be such a rare condition as was previously thought^[10]. Currently, a rapidly rising number of literature cases worldwide indicate that CMV infections can also be observed in immunocompetent patients with altered immune status such as steroid use^[8,11]. A total of 51 immunocompetent patients were diagnosed with CMV colitis between January 1995 and February 2014 at a tertiary care university hospital in South Korea, with 36 cases diagnosed after 2008, suggesting the growing number of immunocompetent CMV patients^[8]. Similarly, 42 immunocompetent patients were diagnosed between April 2002 and December 2016 at a hospital in Taiwan^[11]. Ko *et al.*^[8] reported that risk factors of CMV colitis in immunocompetent patients were steroid use and RBC transfusion within 1 mo. Our

patient also received steroid treatment, and this could be the risk factor of CMV colitis. Wetwittayakhleng *et al.* compared clinical features and endoscopic findings of gastrointestinal CMV diseases between immunocompetent and immunocompromised patients and found that immunocompetent patients were older and had more GI bleeding and shorter symptom period than immunocompromised patients^[5]. Small bowel involvement was more frequent in the immunocompetent group^[5]. Chaemsupaphan *et al.* also reported that most immunocompetent patients presented with gastrointestinal bleeding compared to immunocompromised patients^[6]. In another study by Yoon *et al.*, CMV gastroenterocolitis of immunocompetent patients occurred in older patients with comorbidities and had various endoscopic features such as discrete ulcer type and diffuse edematous type with no association with clinical outcomes^[7].

CDI is a common cause of colitis in hospitalized patients. Although there are variations according to region and year by year, CDI occurs in approximately 10 cases per 1000 hospitalization days^[12]. Clinical manifestations of CDI vary from mild diarrhea to life-threatening conditions such as toxic megacolon and bowel perforation^[12]. Patients with mild CDI often recovered 5 to 10 days after stopping antibiotics^[13]. However, fulminant CDI could occur in approximately 1% to 3% of patients^[13]. Generally, patients with CDI are known to recover after 10~14 days of treatment^[13,14]. Currently, the diagnosis of CDI is based on detection of *C. difficile* toxins and glutamate dehydrogenase with enzyme immunoassay or nucleic acid amplification test^[13]. Endoscopy is not recommended in patients with typical CDI confirmed by laboratory tests and clinical features^[13]. However, endoscopic evaluation is recommended if diagnostic problems occur such as clinically suspected CDI with negative laboratory test, if there was no response to treatment, or when an alternative diagnosis is suspected^[13]. Our patient underwent endoscopy because of worsening symptoms gained after the CDI treatment for 10 days. As CDI and CMV colitis have similar symptoms, it is difficult to differentiate them simply based on the symptoms. However, severe watery diarrhea is more characteristic of CDI and bloody diarrhea or sometimes massive bleeding in CMV colitis^[15]. In our case, the patient developed worsening

bloody diarrhea with fever; we performed endoscopy and the biopsy confirmed CMV colitis.

CONCLUSION

Clinicians should be aware of the possibility of co-existing CMV colitis in patients with CDI, even in those with immunocompetent status, especially if patients do not respond to the CDI treatment. Early endoscopy could help diagnose the possible co-existing CMV colitis in patients with refractory CDI.

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SIMILARITY INDEX

PRIMARY SOURCES

- | | | |
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| 1 | Xue Du, Yang Gao, Kai Kang, Yang Chong et al. "COVID-19 patient with an incubation period of 27 d: A case report", World Journal of Clinical Cases, 2021
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| 4 | "Clinical Vignettes/Case Reports - Esophagus", The American Journal of Gastroenterology, 2014.
<small>Crossref</small> | 17 words — 1% |
| <hr/> | | |
| 5 | academic.oup.com
<small>Internet</small> | 16 words — 1% |
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| 6 | "Pediatrics", The American Journal of Gastroenterology, 9/2006
<small>Crossref</small> | 12 words — 1% |
| <hr/> | | |
| 7 | Petros I Rafailidis. "Severe cytomegalovirus infection in apparently immunocompetent patients: a systematic review", Virology Journal, 2008
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