

Synchronous Onset of Cytomegalovirus Colitis and Ulcerative Colitis in an Immunocompetent Patient: A Case Report

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ABSTRACT

Cytomegalovirus (CMV) infection has been associated with ulcerative colitis (UC). The prevalence of CMV infection in UC patients ranges from 10% to 16%. It is particularly high in the patients with steroid-refractory UC and those treated with immunosuppressants. However, synchronous onset of CMV colitis and UC in an immunocompetent patient is rare. It was originally described in 1990 and since then sixteen cases have been reported, as far as we are aware. Here, we present a case of CMV colitis and UC synchronously developing in an elderly immunocompetent woman. She was diagnosed through tissue immunohistochemistry and successfully treated with intravenous ganciclovir. This case demonstrates that in patients with severe active UC, even with new onset of the disease, CMV infection needs to be ruled out before initiating an aggressive immunosuppressive therapy.

Keywords: Cytomegalovirus infection, immunocompetent, ulcerative colitis

Aparición Sincrónica de la Colitis por Citomegalovirus y la Colitis Ulcerosa en un Paciente Inmunocompetente: Un Reporte de Caso

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RESUMEN

La infección por citomegalovirus (CMV) ha sido asociada con la colitis ulcerosa (CU). La prevalencia de infección por CMV en pacientes con CU oscila entre 10% y 16%. Es particularmente alta en los pacientes con CU refractaria a los esteroides y en aquellos tratados con inmunosupresores. Sin embargo, la aparición sincrónica de la colitis por CMV y la CU en un paciente inmunocompetente es rara. Fue originalmente descrita en 1990, y desde entonces se han reportado dieciséis casos, hasta donde sabemos. Presentamos aquí un caso de colitis por CMV y CU desarrolladas simultáneamente en una mujer mayor inmunocompetente. La paciente fue diagnosticada a través de inmunohistoquímica tisular y tratada exitosamente con ganciclovir intravenoso. Este caso demuestra que en pacientes con CU activa severa, incluso con la reaparición de la enfermedad, la infección por CMV debe descartarse antes de iniciar un tratamiento inmunosupresor agresivo.

Palabras claves: Infección por citomegalovirus, colitis ulcerosa, inmunocompetente

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INTRODUCTION

Cytomegalovirus (CMV) is an opportunistic pathogen that mainly infects immunocompromised patients including organ transplant recipients, patients with acquired immune deficiency

syndrome (AIDS) and malignant tumours and those receiving immunosuppressive agents. Cytomegalovirus infection has also been associated with ulcerative colitis (UC) and mostly occurs in the patients with steroid-refractory UC and those treated with immunosuppressants. However, it is rarely described in immunocompetent individuals. Here, we present a case in which CMV colitis and UC synchronously developed in an immunocompetent patient.

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CASE REPORT

A 61-year old woman was admitted to our hospital with abdominal pain, fever and diarrhoea for 10 days. She complained about paroxysmal colicky pain in the periumbilical region. She had liquid stools with blood and mucus more than 10 times per day. Her body temperature fluctuated between 36.6 and 38.5 °C. She was quite healthy before, without history of diabetes and medication exposures. Her laboratory findings showed an elevated erythrocyte sedimentation rate (118 mm/h, reference range, < 38 mm/h), high elevated C-reactive protein (155 mg/L, reference range, ≤ 5 mg/dL), mild anaemia (haemoglobin: 10.5 g/dL, reference range, 11.5–15.0 g/dL) and mild leukocytosis (white blood cell: $11 \times 10^9/L$, reference range, $4\text{--}10 \times 10^9/L$; neutrophils: 80.1%, reference range, 40–70%). Stool culture was negative, as was HIV testing. Immunoglobulin G (IgG) antibody to anti-CMV was positive (78.6 U/mL) and IgM was negative. Polymerase chain reaction (PCR) analysis of CMV-DNA in peripheral blood was negative. Computed tomography (CT) of the abdomen showed uneven thickening of the colon wall. Colonoscopy demonstrated diffuse congestion and oedema in the entire field of the colonoscopy with multiple ulcers scattered in the transverse colon, descending colon and sigmoid colon. The biopsies suggested crypt abscesses and crypt branch and UC was diagnosed. 5-aminosalicylic acid [5-ASA; 4g/day] resulted in improvement of her symptoms, except the temperature. Before steroids were given, immunohistochemistry (IHC) for CMV was ordered and the results were positive. Intravenous ganciclovir (5 mg/kg/12 hours) was prescribed. Over the next few days, her symptoms gradually disappeared. A repeated colonoscopy after three weeks showed the inflammation was significantly improved and IHC for CMV was negative. She was discharged on 5-ASA without symptoms. Six months later, she remained symptom free and repeat colonoscopy was totally normal.

DISCUSSION

Cytomegalovirus infection mostly occurs in immunocompromised patients. It can involve a lot of organs including lungs, liver, pancreas, central nervous system, heart and gastrointestinal tract (1). In immunocompetent hosts, it is usually subclinical or asymptomatic (2), but sometimes severe complications may occur. A cohort study reported that among 116 immunocompetent adults with acute CMV infection, 2 (1.7%) developed severe complications (3). In another cohort of 115 immunocompetent patients with acute CMV infection, 6 (5.2%) developed severe disease (4).

Studies showed that the infection of CMV is closely associated with UC. The first case was reported in 1961 (5). The prevalence of CMV infection in UC patients ranges from 10% to 16% (6). It is particularly high in the patients with steroid-refractory UC and those treated with immunosuppressants (7). However, CMV infection complicating the first episode of UC in an immunocompetent patient is rare. It was originally described in 1990 (8). Since then, sixteen cases have been re-

ported (9). Two studies identified CMV colitis in new onset UC patients at 4.5% (3/65 cases) and 8.2% (5/61 cases), respectively (6, 10). In the study of Kim *et al*, they identified CMV colitis in 8.2% (5/61 cases) of newly diagnosed UC patients (6). These five cases had no inclusion bodies on haematoxylin and eosin stain. None of them was diagnosed with CMV colitis at the time of diagnosis of UC, which suggested that a large number of synchronous CMV colitis is often missed in newly diagnosed UC patients. Cytomegalovirus colitis may cause a similar appearance to UC. Takayuki *et al* (11) found no typical features unique to CMV (+) compared with CMV (-) ones through endoscopic observation of 187 UC patients. Therefore, the question of how to improve the diagnosis of CMV infection in UC patients needs to be solved.

Cytomegalovirus infection can be diagnosed through viral culture, serology, CMV antigenaemia, histopathology and PCR analysis (12). Viral culture of patient's specimens such as blood, urine, body fluids and stools is highly specific, but it takes a long time and the sensitivity is quite low. Serology is of limited value for diagnosing active infection because of the high seroprevalence in adults. Cytomegalovirus antigenaemia is used to directly detect the antigen of CMV in specimen materials without separating CMV from the tissues. The sensitivity and specificity of CMV antigenaemia assay were 47.0% and 81.7% in UC patients (13). The advantages of PCR analysis are rapid outcomes, high sensitivity, and the utility for qualitative and quantitative testing. Histology is the gold standard for diagnosing CMV infection. European Crohn's and Colitis Organization (ECCO) suggested that CMV colitis can be diagnosed by a combination of histopathology with either tissue PCR or IHC (14). The CMV infection in our patient was missed in the beginning and finally diagnosed through tissue IHC.

There is still no consensus on the necessity of antiviral treatment in patients with CMV and UC. Begos *et al* found that inflammatory bowel disease patients complicated by CMV had a higher colectomy and mortality rate (15). They suggested antiviral treatment should be given to these patients. A retrospective cohort study included 38 active inflammatory bowel disease (IBD) patients with CMV infection, 13 of whom received an antiviral treatment. The results showed that there was no significant difference between the patients receiving antivirals or not during the hospital stay, but the long-term outcome was more advantageous in UC-CMV patients on antiviral therapy (16). In another case-control study, the authors showed that antiviral treatment can improve the surgery-free rate of IBD patients with CMV infection, particularly of those with high-grade CMV density (17). On the contrary, Delvincourt *et al* found no benefit of antiviral therapy in length of hospital stay and colostomy rate during the follow-up at three months in CMV-IBD patients (18). More studies are needed to draw a conclusion.

Here, we reported a case in which CMV colitis and UC synchronously developed. Although CMV infection is not rare in new onset UC, it is often underestimated. In patients with

severe active UC, even with new onset of the disease, CMV infection needs to be ruled out before initiating an aggressive immunosuppressive therapy.

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