

# Cytomegalovirus enteritis: a surprising cause of severe diarrhoea and protein-losing gastroenteropathy in an intensive care patient

Kenta Yasuoka,<sup>1</sup> Hirohisa Fujikawa ,<sup>1,2</sup> Shunichi Shibazaki<sup>1</sup>

<sup>1</sup>Department of Emergency and General Internal Medicine, Hitachinaka General Hospital, Hitachinaka, Ibaraki, Japan  
<sup>2</sup>Department of Medical Education Studies, International Research Center for Medical Education, Graduate School of Medicine, The University of Tokyo, Bunkyo-ku, Tokyo, Japan

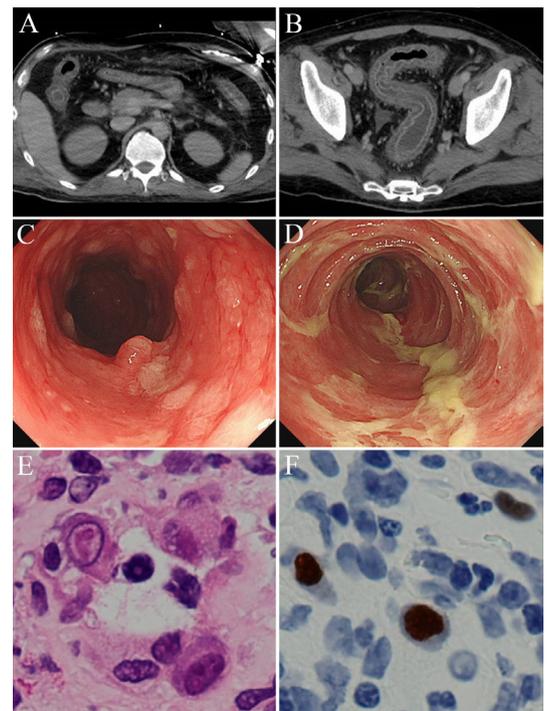
**Correspondence to**  
Dr Hirohisa Fujikawa;  
hirohisa.fujikawa@gmail.com

Accepted 8 April 2022

## DESCRIPTION

A man in his 40s with hypertension and dyslipidaemia presented with acute chest pain. During transfer to the hospital, an ECG showed ST-segment elevation and ventricular fibrillation. Cardiopulmonary resuscitation, defibrillations and intravenous epinephrine were administered. Coronary angiography showed complete left anterior descending artery occlusion. A percutaneous intervention was performed, and he was admitted to the intensive care unit (ICU). On the third day after admission to the ICU, the patient again suffered cardiopulmonary arrest and required ventilator support. Although his general condition gradually improved, the patient presented diarrhoea exceeding 10 L/day on the 28th day of hospitalisation. Laboratory examinations showed decreased serum albumin and protein (0.4 and 1.8 g/dL, respectively) and elevated alpha-1 antitrypsin clearance (1650 mL/day), indicating protein-losing enteropathy (PLE). An abdominal CT showed ileum and colon wall thickening (figure 1A,B). Circumferential ulcers were found on colonoscopy with a loss of mucosa and villi in the terminal ileum and diffuse oedema and ulcerations throughout the colon (figure 1C,D). Microscopy of a sigmoid colon biopsy specimen revealed cytomegalic changes with intranuclear inclusion bodies (figure 1E) positive for cytomegalovirus (CMV) (figure 1F), although the patient had no previous history of immunodeficiency. CMV antigenaemia was positive. There were no other diseases that could cause diarrhoea (eg, *Clostridium difficile* infection and drug-induced diarrhoea) other than CMV enteritis. The diagnosis of PLE due to CMV enteritis was established. Clinical evidence of other organ involvement (eg, pneumonitis, hepatitis and retinitis) was not present. The patient was treated with intravenous ganciclovir for 2 weeks. After the antiviral therapy, diarrhoea stopped. The patient was transferred from ICU to general ward on the eighty-eighth day of hospitalisation. The patient's ability to walk was temporarily impaired due to the severe diseases (ie, myocardial infarction and cardiopulmonary arrest, and PLE due to CMV enteritis after admission). However, after hard work and rehabilitation, he was discharged with no complications 5 months after admission.

CMV remains in the body for life after primary infection; however, it often reactivates and affects organs, including the lungs, eyes, nerves and gastrointestinal tract. While CMV enteritis in immunocompromised hosts is almost always secondary to



**Figure 1** (A) Abdominal CT showed wall thickening of the ileum. (B) Abdominal CT showed wall thickening of the colon. (C) Colonoscopy showed circumferential ulcerations with a loss of mucosa and villi in the terminal ileum. (D) Colonoscopy showed diffuse mucosal oedema and ulcer formation throughout the colon. (E) Histopathological study of the sigmoid colon biopsy specimen showed intranuclear inclusion bodies (H&E stain, original magnification  $\times 400$ ). (F) Immunohistochemical stain showed positive cytomegalovirus immunoreactivity (original magnification  $\times 400$ ).

the reactivation of latent infection, CMV enteritis can be a presentation of primary infection in immunocompetent patients. In patients with CMV enteritis, a typical presentation is diarrhoea, abdominal pain and fever. Histological examination of tissue biopsies on endoscopy establishes the diagnosis.<sup>1</sup> Although optimal treatment of CMV enteritis remains undefined, intravenous ganciclovir is commonly used as first-line therapy.<sup>2</sup>

PLE is an uncommon condition characterised by excessive serum protein loss in the gastrointestinal tract, resulting in hypoproteinaemia and oedema. The pathological mechanisms are categorised into erosive/ulcerative mucosal diseases, leaky gut



© BMJ Publishing Group Limited 2022. No commercial re-use. See rights and permissions. Published by BMJ.

**To cite:** Yasuoka K, Fujikawa H, Shibazaki S. *BMJ Case Rep* 2022;**15**:e249258. doi:10.1136/bcr-2022-249258

## Images in...

conditions and increased interstitial pressure.<sup>3</sup> CMV-associated PLE in immunocompetent adults is rare and occurs not only in Ménétrier disease but also in erosive gastrointestinal disorders, as in this case.<sup>4</sup>

CMV is an opportunistic viral pathogen, and CMV enteritis has been recognised as rare in immunocompetent hosts. However, recent research has indicated that CMV enteritis is more frequent than previously considered, especially in the ICU setting. According to a recent meta-analysis study, in immunocompetent patients in ICUs, the overall detection rate of CMV was as high as 27% and the incidence of CMV reactivation was 31%.<sup>5</sup> The most frequent site of severe life-threatening CMV infection in immunocompetent patients is the gastrointestinal tract, followed by the central nervous system and the haematological system.<sup>6</sup> In immunocompetent patients, the risk factors for CMV enteritis are advanced age, ICU admission, comorbidities or severe concomitant conditions, including coronary artery disease and hypertension.<sup>7</sup> CMV enteritis may result in severe complications (eg, bowel perforation and PLE) and could be fatal. However, a recent study suggested that early diagnosis

would improve in-hospital mortality and overall survival, although CMV enteritis had a poor prognosis (bowel perforation rate of 4.3% and in-hospital mortality rate of 26.1%).<sup>7</sup> Therefore, if diarrhoea occurs in an immunocompetent patient, especially with risk factors, CMV enteritis should be included in the differential diagnoses, and early colonoscopy should be performed.

**Contributors** KY drafted the manuscript. HF reviewed and supervised the manuscript. SS acquired data and reviewed and supervised the manuscript. All authors read and approved the final manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Consent obtained directly from patient(s).

**Provenance and peer review** Not commissioned; externally peer reviewed.

Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

### ORCID iD

Hirohisa Fujikawa <http://orcid.org/0000-0002-8195-1267>

### REFERENCES

- Kim CH, Bahng S, Kang KJ, *et al*. Cytomegalovirus colitis in patients without inflammatory bowel disease: a single center study. *Scand J Gastroenterol* 2010;45:1295–301.
- Chaemsupaphan T, Limsrivilai J, Thongdee C, *et al*. Patient characteristics, clinical manifestations, prognosis, and factors associated with gastrointestinal cytomegalovirus infection in immunocompetent patients. *BMC Gastroenterol* 2020;20:22.
- Elli L, Topa M, Rimondi A. Protein-losing enteropathy. *Curr Opin Gastroenterol* 2020;36:238–44.
- Perrineau S, Cazals-Hatem D, Zarrouk V, *et al*. Cytomegalovirus-associated protein-losing enteropathy in a healthy man. *Med Mal Infect* 2017;47:562–5.
- Li X, Huang Y, Xu Z, *et al*. Cytomegalovirus infection and outcome in immunocompetent patients in the intensive care unit: a systematic review and meta-analysis. *BMC Infect Dis* 2018;18:289.
- Rafailidis PI, Mourtzoukou EG, Varbobitis IC, *et al*. Severe cytomegalovirus infection in apparently immunocompetent patients: a systematic review. *Virology* 2008;5:47.
- Le P-H, Lin W-R, Kuo C-J, *et al*. Clinical characteristics of cytomegalovirus colitis: a 15-year experience from a tertiary reference center. *Ther Clin Risk Manag* 2017;13:1585–93.

### Patient's perspective

Diarrhea made my buttocks rough and painful. I could not sleep at night because of the diarrhea. I am really glad that I got well.

### Learning points

- ▶ Cytomegalovirus (CMV) enteritis can occur in an immunocompetent patient, especially with risk factors such as advanced age, intensive care unit admission, comorbidities or severe concomitant conditions.
- ▶ CMV enteritis may lead to protein-losing enteropathy due to mucosal injury, resulting in massive diarrhoea, which can be fatal.

Copyright 2022 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <https://www.bmj.com/company/products-services/rights-and-licensing/permissions/>  
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

### Customer Service

If you have any further queries about your subscription, please contact our customer services team on +44 (0) 207111 1105 or via email at [support@bmj.com](mailto:support@bmj.com).

Visit [casereports.bmj.com](http://casereports.bmj.com) for more articles like this and to become a Fellow