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## Cytomegalovirus enteritis with ischemia in an immunocompetent patient: A rare case report



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## ABSTRACT

**INTRODUCTION:** Cytomegalovirus (CMV) is predominantly an opportunistic infection in the immunocompromised patients. Though, there are few cases of CMV colitis being reported in the immunocompetent individuals, CMV enteritis is exceedingly rare and enteritis leading into small bowel ischemia has never been reported yet.

**PRESENTATION OF CASE:** A 78-year-old male patient presented with distal small obstruction for 4 days duration. Clinical examination revealed a distended abdomen and localised peritonism in right iliac fossa. An initial computed tomography (CT) scan revealed distended small bowel loops up to the thickened inflamed terminal ileum with no free fluid or gas and a normal appendix. No immunosuppressive risk factors such as human immunodeficiency virus, transplant procedures, or steroid therapy were present. Hematologic investigations showed leucocytosis with neutrophilia. Diagnostic laparoscopy confirmed a thickened terminal ileum causing small bowel obstruction. Laparoscopy converted to laparotomy and right hemicolectomy was performed. Histology showed isolated small bowel ischemia with ulcerative changes and cytomegalovirus inclusions. The patient was started on ganciclovir therapy and subsequently had an uneventful recovery and discharged after 16 days.

**DISCUSSION:** Cytomegalovirus enteritis was initially not suspected in our patient. In this case CMV caused ischemia of the small bowel without evidence of colonic involvement. Even in elderly patients, the small bowel remains resilient to the ischemic changes because of the copious blood supply.

**CONCLUSION:** We report possibly the first case of isolated small bowel ischaemia caused by cytomegalovirus in immunocompetent individuals, needed surgical resection.

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## 1. Introduction

Cytomegalovirus (CMV), a DNA virus and a member of the herpes family, is well known to cause infections in the immunocompromised patients [1]. Its worldwide seropositivity ranges from 45% to 100% [2]. Primary or reactivated infections are typically seen in individuals with acquired immunodeficiency syndrome or in patients undergoing chemotherapy or transplant [3]. CMV can involve specific organs, such as the retina, respiratory tract, central nervous system, and gastrointestinal tract [4].

CMV infection is not a common occurrence in immunocompetent individuals. But common systems involved are the gastrointestinal tract followed by the central nervous system [5]. It can infect the gastrointestinal tract from the oesophagus to the rectum, with the most frequent site being the colon [6]. The occurrence of CMV enteritis is considered to be rare in this group and enteritis leading to ischemia is unheard of.

## 2. Presentation of case

A 78-year-old male patient presented to our hospital with colicky central abdominal pain and vomiting. Significant medical history included type 2 diabetes mellitus, chronic obstructive airway disease, and hypertension. The patient had no known history of immunodeficient conditions such as steroid intake, hepatitis B or C, human immunodeficiency virus infection, chemotherapy, or organ transplantation.

Clinical examination revealed distended abdomen with localised peritonism in right lower quadrant. Routine haematology results showed leucocytosis of  $15.1 \times 10^9/L$  (range,  $3.5\text{--}11.0 \times 10^9/L$ ) with neutrophilia. A computed tomography (CT) scan showed a segment of distal ileum with oedematous and thickened appearance, suggestive of focal enteritis, with some fluid around the associated mesentery (Fig. 1) as well as features of small bowel obstruction. A diagnostic laparoscopy confirmed the CT findings and cause of obstruction as inflammatory stricture in the involved ileal segment. Surgery proceeded to open hemicolectomy. Histopathology showed normal caecum and ascending colon. Surprisingly, the ileum had segmental ischemic changes

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**Fig. 1.** Thickened ileal segment with reactive fluid.

and ulceration with a marked transition from normal mucosa. Hallmark cytopathic CMV inclusions were present in vascular endothelium of the capillaries and stroma of the ileal segment. Blood cultures did not yield any pathologic organisms. After the surgical procedure, serologic studies were conducted to check the patient's immune system. Human immunodeficiency virus immunologic assays were normal. Cytomegalovirus IgG antibodies were present, and IgM assays were nonreactive.

### 3. Outcome and follow-up

The patient received care in an intensive care unit during the postoperative period and was started on intravenous 440 mg ganciclovir for 3 weeks. He then transferred to a transitional care facility for rehabilitation and discharged home after 16 days of uneventful course. He was followed up in surgical clinic after two weeks and subsequently discharged to general practitioner's care in the community.

### 4. Discussion

In otherwise immunocompetent individuals, colitis is the most common gastrointestinal manifestation of CMV [8]. The disease cascade is thought to be initiated by changes in vascular endothelium, with resultant ischemic damage to the mucosa of the colon [9]. This may lead to ulceration and ultimately to perforation.

Cases of isolated CMV enteritis are sparsely reported, and, to date, its association with ischemia has not been reported. It is mainly present in patients above 50 years of age [10]. The review of literature on CMV enteritis was done by Karigane et al. The commonest symptom described was diarrhea (76%), followed by abdominal pain (52%). Hematochezia, melena, or bloody stool was described in only 27% of the patients [7]. Complications associated with enteritis are mainly perforation secondary to ileal ulceration.

Diagnosis of enteritis/ileitis has mainly been established on a histological basis with the assistance of colonoscopic biopsies of the terminal ileum. Surgical resection, secondary to complications, is rarely required in the first place [11]. The role of serologic assays is debatable. In most instances, including this case, such tests were requested as an adjunct after confirmation of histology because disease was not suspected earlier [10,11].

As in our reported case, thickening of the ileum on computed tomography scan is a salient feature commonly shown in other cases of CMV enteritis (Fig. 1). In this case, small bowel's mesentery had palpable pulse, which suggested ischemia is at small vessel level. Lack of coexisting colitis was another notable feature. On biopsy, ischemic mucosa was limited to a segment of the ileum only. With the understanding that the small bowel has richer vasculature than the colon, the colon, even in elderly patients, is more susceptible to ischemia than the ileum.

Different serologic tests can be done, including tests for CMV IgM and IgG antibodies and CMV viral load. However, the sensitivity of such investigations has not been fully established. In addition, the role of antigenemia for the diagnosis of CMV gastroenteritis is limited in patients who are on immunosuppressive therapies [12]. Similarly, in our patient, serologic assays were not helpful. Although no obvious risk factors were present, diabetes and old age are relative risks for the immune system's integrity. In elderly patients who are not apparently immunocompromised, CMV should be included in differential diagnosis for gastroenteritis-like diseases.

### 5. Conclusion

CMV enteritis should be recognized as a possible disease entity not only in immunocompromised patients but also in some immunocompetent individuals, especially in the elderly with multiple medical conditions. Although its association with ischemia is a rare occurrence, an accumulation of more cases is required to further elucidate the risk factors and optimal surgical treatment.

### Conflict of interest

None to declare.

### Funding

None.

### Ethical approval

Not applicable as per journal policy.

### Consent

Informed consent was taken from patient's next to kin.

### Author contribution

Z. Naseem formulated concept of study, prepared the manuscript, literature review, editing and image creation.

R. Hendarhewa contributed towards intellectual content, conception, literature review and editing.

G. Premaratne was involved in the care of patient and contributed towards intellectual content.

M. Mustaeiev was involved in editing of the manuscript.

### Guarantor

R.H. and Z.N. will act as guarantor of this work.

## References

- [1] M. Ho, The history of cytomegalovirus and its diseases, *Med. Microbiol. Immunol.* 197 (2) (2008) 65–73.
- [2] M.J. Cannon, D.S. Schmid, T.B. Hyde, Review of cytomegalovirus seroprevalence and demographic characteristics associated with infection, *Rev. Med. Virol.* 20 (4) (2010) 202–203.
- [3] R. Osawa, N. Singh, Cytomegalovirus infection in critically ill patients: a systematic review, *Crit. Care* 13 (3) (2009) R68.
- [4] N. Michalopoulos, K. Triantafyllidou, E. Beretouli, S. Laskou, T.S. Papavramidis, I. Pliakos, et al., Small bowel perforation due to CMV enteritis infection in an HIV-positive patient, *BMC Res. Notes* 6 (2013) 45.
- [5] S. Karakozis, E. Gongora, M. Caceres, E. Brun, J.W. Cook, Life-threatening cytomegalovirus colitis in the immunocompetent patient: report of a case and review of the literature, *Dis. Colon Rectum* 44 (11) (2001) 1716–1720.
- [6] J.H. Ko, K.R. Peck, W.J. Lee, J.Y. Lee, S.Y. Cho, Y.E. Ha, et al., Clinical presentation and risk factors for cytomegalovirus colitis in immunocompetent adult patients, *Clin. Infect. Dis.* 60 (6) (2015) e20–e26.
- [7] D. Karigane, S. Takaya, Y. Seki, Y. Mastumoto, A. Onose, A. Kosakai, et al., Cytomegalovirus enteritis in immunocompetent subjects: a case report and review of the literature, *J. Infect. Chemother.* 20 (5) (2014) 325–329.
- [8] T. Hasegawa, K. Aomatsu, M. Nakamura, N. Aomatsu, K. Aomatsu, Cytomegalovirus colitis followed by ischemic colitis in a non-immunocompromised adult: a case report, *World J. Gastroenterol.* 21 (12) (2015) 3750–3754.
- [9] R.W. Goodgame, Gastrointestinal cytomegalovirus disease, *Ann. Intern. Med.* 119 (9) (1993) 924–935.
- [10] M.A. Tejedor Cerdena, A. Velasco Guardado, A. Fernandez Prodomingo, M.C. Concepcion Pinero Perez, R. Calderon, A.B. Prieto Bermejo, et al., Cytomegalovirus ileitis in an immunocompetent patient, *Rev. Esp. Enferm. Dig.* 103 (3) (2011) 154–156.
- [11] J.M. Cha, J.I. Lee, J.W. Choe, K.R. Joo, S.W. Jung, H.P. Shin, et al., Cytomegalovirus enteritis causing ileal perforation in an elderly immunocompetent individual, *Yonsei Med. J.* 51 (2) (2010) 279–283.
- [12] T. Mori, S. Mori, Y. Kanda, K. Yakushiji, S. Mineishi, Y. Takaue, et al., Clinical significance of cytomegalovirus (CMV) antigenemia in the prediction and diagnosis of CMV gastrointestinal disease after allogeneic hematopoietic stem cell transplantation, *Bone Marrow Transplant.* 33 (4) (2004) 431–434.

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