

Case Report

Cytomegalovirus enteritis causing multifocal ileal perforation in a patient with chronic lymphocytic leukaemia: a case report

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ABSTRACT

Cytomegalovirus (CMV) infection of the gastrointestinal tract occurs predominantly in immunocompromised patients and most commonly affects the stomach and colon, while clinically significant small bowel disease and perforation are rare. We report a case of a 79-year-old man with chronic lymphocytic leukaemia (CLL), developing a superimposed CMV infection leading to hollow viscus perforation. CMV inclusions were confined to ulcerated mucosa overlying areas of neoplastic infiltration and were absent in intervening macroscopically normal bowel, supporting a synergistic clinicopathological mechanism rather than incidental co-infection. This case highlights that in immunocompromised patients with multifocal bowel thickening and perforation, CMV enteritis should be considered even when preoperative imaging suggests an alternative source.

Keywords: Cytomegalovirus enteritis, Small bowel perforation, Chronic lymphocytic leukaemia, Ganciclovir, Immunocompromised host, Case report

INTRODUCTION

Cytomegalovirus (CMV) is a well recognised opportunistic pathogen in immunocompromised hosts and can involve any segment of the gastrointestinal tract, although colonic and gastric disease is reported more often than small bowel involvement.¹⁻⁵ Tissue invasive gastrointestinal CMV disease may present with abdominal pain, bleeding, diarrhoea, ulceration, ischaemia, or perforation, and diagnosis generally relies on histopathology with demonstration of characteristic viral cytopathic change, often supported by immunohistochemistry.^{1,5} Small bowel perforation due to CMV enteritis has been described in patients with acquired immunodeficiency syndrome (AIDS), transplantation, leukaemia, and other immunosuppressed states, but remains uncommon.^{2-4,6} In parallel, bowel infiltration by lymphoid malignancy can also weaken the intestinal wall and contribute to perforation risk.⁷ We

report a case of multifocal ileal perforation in a patient with CLL in whom resection specimen histology demonstrated both neoplastic lymphoid infiltration and superimposed CMV infection supporting a synergistic mechanism of bowel injury.

CASE REPORT

A 79-year-old man with CLL with progressive anaemia and nodal disease was admitted under Haematology with intermittent febrile episodes and rhinovirus. His background history included chronic kidney disease, coronary artery disease, prior prostate cancer treated with radiotherapy, and obstructive sleep apnoea on CPAP. Positron emission tomography (PET-CT) performed one month prior to admission, for assessment of possible disease progression in the setting of B symptoms, including 12 kg weight loss and night sweats, demonstrated scattered moderate to intense FDG uptake

within multiple bowel loops with associated circumferential wall thickening. Similar appearances were present on diagnostic CT performed two days earlier. At the time these findings were interpreted as possibly physiological to peristalsis; however, in retrospect they likely represent early small bowel involvement preceding perforation. There was no PET evidence of Richter's transformation.

During admission he developed sudden onset abdominal pain with clinical features of peritonitis. CT chest, abdomen and pelvis showed new moderate to large volume intraperitoneal free air and free fluid consistent with hollow viscus perforation (Figure 1), predominantly intrapelvic and within small bowel mesentery, together with multiple segments of circumferential small bowel wall thickening and extensive pathologic appearing mesenteric lymph nodes previously seen on PET-CT.

Emergency diagnostic laparoscopy converted to laparotomy and small bowel resection was performed. Operative findings included a grossly contaminated peritoneal cavity with bilious and faeculent fluid, especially in the lower quadrants and pelvis, dense interloop inflammatory adhesions, and four segments of pathologically thickened ileal bowel wall within 50 cm of distal small bowel length. The intervening segments of bowel appeared normal visually and on palpation. Two perforations were identified in the most diseased segment. The remainder of the small bowel and the

colon, including the sigmoid colon, were examined and no other perforation was identified. Multiple markedly enlarged mesenteric lymph nodes up to 4 cm were present, with one node sent fresh for flow cytometry. The disease segment of ileum was resected and a side to side stapled primary anastomosis was fashioned approximately 20 cm proximal to the ileocaecal valve.

Histopathology described perforated small bowel with extensive fibropurulent exudate and transmural abnormal small lymphocytic infiltration consistent with known CLL. The overlying mucosa was ulcerated, and included enlarged cells with nuclear and cytoplasmic viral inclusions from superimposed CMV infection. CMV immunohistochemistry was positive in the ulcerated mucosa above the neoplastic lymphoid population, while intervening unremarkable mucosa did not show CMV inclusions. Two sampled lymph nodes showed effacement by an abnormal B cell population positive for CD20, CD23, CD5, and CD43, with no evidence of high-grade transformation and margins clear of lymphoma by at least 10 mm. CMV PCR during admission was positive and intravenous ganciclovir was commenced, followed by step-down to oral valganciclovir. CMV viraemia subsequently became undetectable. Review of previous records identified positive CMV PCR results on multiple occasions before presentation, raising the possibility of preceding CMV reactivation and progressive bowel disease before perforation. No CMV-directed therapy was initiated during this period.

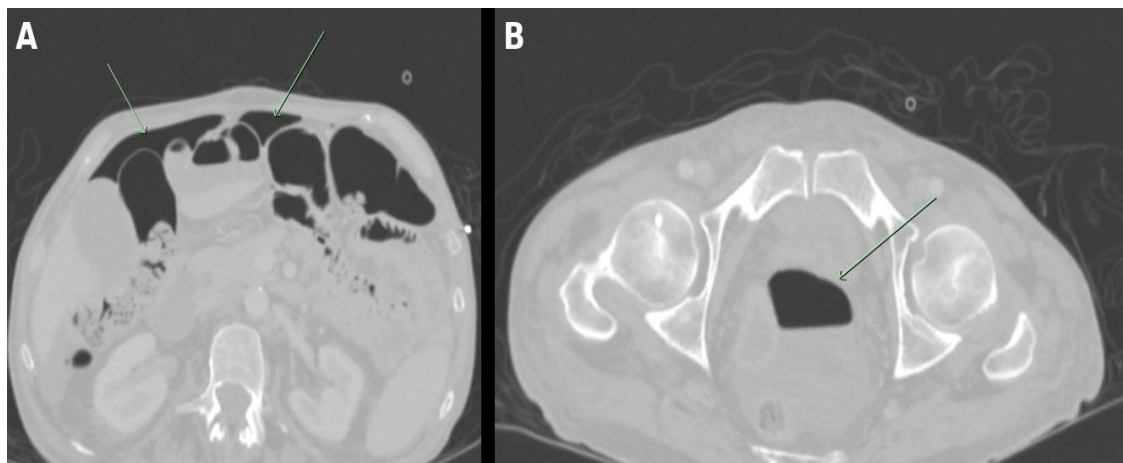


Figure 1 (A and B): Axial computed tomography of the abdomen and pelvis at the onset of acute abdominal pain. (A) Upper abdomen, demonstrating moderate to large volume free intraperitoneal gas collecting anteriorly beneath the anterior abdominal wall (arrows). (B) Pelvis, demonstrating a further loculated collection of free intraperitoneal gas (arrow). The findings are consistent with hollow viscus perforation.

DISCUSSION

This case highlights several important considerations relevant to clinicians seeing patients with haematological malignancy presenting with abdominal symptoms. First, CMV enteritis causing small bowel perforation is rare, particularly outside the classic settings of advanced HIV or transplantation, but it has been repeatedly reported in

immunocompromised adults and should be considered in patients with bowel thickening, ulceration, or perforation.^{2-4,6}

Second, this patient had CLL with histological evidence of bowel and lymph node involvement. Intestinal lymphoma or lymphoid infiltration can impair bowel wall integrity and is itself associated with perforation, making

the coexistence of malignant infiltration and CMV infection a plausible synergistic mechanism for perforation in this case.^{7,8} The pathology in this patient strongly supports that interpretation because CMV inclusions and positive immunohistochemistry were confined to ulcerated mucosa overlying neoplastic lymphoid infiltrates, with no inclusions in intervening unremarkable mucosa. Similar pathological relationships have been described in cases where CMV appears to act as a secondary superinfection in already diseased bowel.^{3,9}

PET-CT imaging performed prior to perforation demonstrated multifocal FDG-avid small bowel thickening. Retrospective recognition of these findings supports evolving bowel involvement preceding the acute presentation and strengthens the suggestion of a synergistic interaction between lymphomatous infiltration and secondary CMV infection.

Finally, this case highlights that patients with untreated CLL may remain functionally immunocompromised and susceptible to opportunistic infection even before disease-directed therapy is commenced. Once tissue-invasive CMV disease was recognised and blood CMV PCR was positive, targeted antiviral treatment with ganciclovir followed by valganciclovir was instituted. Published experience supports the combination of operative management for perforation and antiviral therapy for tissue-invasive CMV disease in immunocompromised patients.^{2-4,6} Overall, the case emphasises that in patients with haematological malignancy, multifocal small bowel thickening and mesenteric lymphadenopathy should prompt consideration of both neoplastic and opportunistic infective causes, even when imaging initially suggests a benign alternative.

CONCLUSION

CMV enteritis is a rare but important cause of small bowel perforation in immunocompromised patients, and this case demonstrates a probable synergistic interaction between tissue-invasive CMV infection and bowel infiltration by CLL, resulting in multifocal ileal perforation. The principal contribution of this report is histopathological: CMV inclusions and positive immunohistochemistry were confined to ulcerated mucosa directly overlying areas of neoplastic lymphoid infiltration and were absent in intervening macroscopically and microscopically normal bowel, providing direct tissue-level evidence of a clinicopathological relationship rather than incidental co-infection. This spatial correlation, supported by retrospective review of imaging showing multifocal FDG-avid bowel wall thickening preceding the acute presentation and by recurrent CMV PCR positivity indicating ongoing viral activity before perforation, advances current understanding by suggesting that CMV

acts as a secondary superinfection of bowel already structurally weakened by lymphoid infiltration, rather than as an independent cause of perforation. It further demonstrates that patients with untreated CLL may be functionally immunocompromised and at risk of tissue-invasive CMV disease before any disease-directed therapy is commenced. Although it cannot be determined whether earlier antiviral therapy would have prevented perforation, this case supports a lower threshold for investigating tissue-invasive CMV disease in immunocompromised patients with CMV viraemia and unexplained multifocal bowel wall thickening, so that antiviral therapy can be initiated early, oncological management informed, and the risk of catastrophic complications such as perforation potentially reduced.

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REFERENCES

- Galiatsatos P, Shrier I, Lamoureux E, Szilagyi A. Meta-analysis of outcome of cytomegalovirus colitis in immunocompetent hosts. *Dig Dis Sci*. 2005;50(4):609-616.
- Ko JH, Peck KR, Lee WJ, Ji Yong L, Sun YC, Young EH, et al. Clinical presentation and risk factors for cytomegalovirus colitis in immunocompetent adult patients. *Clin Infect Dis*. 2015;60(6):e20-26.
- Cha JM, Lee JI, Choe JW, Kwang RJ, Sung WJ, Hyun PS, et al. Cytomegalovirus enteritis causing ileal perforation in an elderly immunocompetent individual. *Yonsei Med J*. 2010;51(2):279-83.
- Nishimura T, Nakao A, Okamoto A, Takako K, Seiichi H, Noritomo F, et al. Ileum perforation due to cytomegalovirus infection in a patient with adult T-cell leukemia. *Acute Med Surg*. 2016;3(2):178-81.
- Goodgame RW. Gastrointestinal cytomegalovirus disease. *Ann Intern Med*. 1993;119(9):924-35.
- Song KS, Kim MJ, Lim HK, Yoon HH, Sung SP, Chang WH, et al. Small Bowel Perforation Associated With Gastrointestinal Graft-Versus-Host Disease and Cytomegalovirus Enteritis in a Patient With Leukemia: A Case Report With Literature Review. *Ann Coloproctol*. 2020;36(4):281-4.
- Vaidya R, Habermann TM, Donohue JH. Bowel perforation in intestinal lymphoma: incidence and clinical features. *Ann Oncol*. 2013;24(9):2439-43.
- Dughayli MS, Baidoun F, Lupovitch A. Synchronous perforation of non-Hodgkin's lymphoma of the small intestine and colon: a case report. *J Med Case Rep*. 2011;5:57.
- Baroco AL, Oldfield EC. Gastrointestinal cytomegalovirus disease in the immunocompromised patient. *Curr Gastroenterol Rep*. 2008;10(4):409-16.

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