

## Cytomegalovirus Ileitis with Ileal Stenosis and SIADH in Immunocompetent Patient

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### ABSTRACT

A 83-year-old woman was admitted with dull-aching peri-umbilical abdominal pain, nausea and vomiting for 2 weeks after an initial episode of gastroenteritis. Physical examination showed mild abdominal distension, normal bowel sounds with mild bilateral lower quadrant tenderness and rebound. The plain film of the abdomen revealed mild generalized small bowel dilatation and mucosal swelling at the terminal ileum and CT scan confirmed that terminal ileal bowel wall swelling and stenosis. CMV was confirmed from biopsies taken at colonoscopy. But CMV viral load could not be detected from the blood sample. Investigations revealed hyponatremia which on further testing was thought to be secondary to SIADH.

Intravenous ganciclovir was prescribed but she progressed to clinical gut obstruction. Exploratory laparotomy and terminal ileectomy was performed which showed a terminal ileal stricture. After surgery and intravenous ganciclovir for 3 weeks, she was symptom-free with resolution of the hyponatremia.

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## BACKGROUND

Cytomegalovirus (CMV) or human herpes virus (HHV)-5 belongs to the betaherpesvirinae subfamily of herpesviridae for which the primary target cells are lymphocyte, monocyte and epithelial cells<sup>(1,2)</sup>. CMV infections are not rare and according to seroprevalence for CMV, ranges from 60-100%<sup>(3)</sup>. It is a significant opportunistic infection in the immunocompromised patients such as in AIDS or post organ transplant patients<sup>(4)</sup>. In this setting, the clinical manifestations include encephalitis, pneumonitis, hepatitis, uveitis, retinitis, colitis, and graft rejection. By contrast, significant CMV infection in immunocompetent hosts may be asymptomatic<sup>(5)</sup> or as a non-specific viral syndrome<sup>(6)</sup>. However, from a recent systematic review, a severe form of CMV infection in immunocompetent hosts may not be rare as previously thought, and the most frequent sites of infection include the gastrointestinal tract, with colitis being the most common, and CNS infection, respectively<sup>(6)</sup>.

## CASE PRESENTATION

A 83 year-old-woman with the underlying hypertension, dyslipidemia and previous cesarean resection was admitted due to epigastric discomfort, nausea for 2 weeks, one episode of vomiting and intermittent low grade fever. Her body temperature was 38.1°C, blood pressure was 140/80 mmHg without orthostatic hypotension, pulse (90/min) was full and regular and ab-

dominal examination revealed mild distension, low midline surgical scar, normal bowel sounds, mild bilateral lower quadrant tenderness with slight rebound tenderness. She was still passing wind and feces. She had taken a 3 day course of herbal medicine 6 months prior to admission.

## Investigations

Blood samples obtained at a time of admission showed that CBC: Hct 36.1%, Hb 11.3 g/dL, WBC 9,300/mm<sup>3</sup>, N 81%, L 11%, M 8% and platelet counts 565,000/mm<sup>3</sup>, Blood chemistry: Na 123 mmol/mL, K 4.63 mmol/mL, Cl 94 mmol/mL, HCO<sub>3</sub> 23.4 mmol/mL, serum osmolality 254 mOsm/kgH<sub>2</sub>O, BUN 11 mg/dL, Cr 0.6 mg/mL, uric acid 1.2 mg/dL, Phos 4.5 mg/dL, Mg 2.0 mg/dL, Ca 8.0 mg/dL. Thyroid function tests and morning serum cortisol was normal. Liver function tests: TB 0.7 mg/dL, DB 0.3 mg/dL, AST 26 U/L, ALT 33 U/L, ALP 120 U/L, GGT 102 U/L, albumin 23.8 g/L and total protein 52.5 g/L. Her urine Na and urine osmolality was 46 mmol/L and 555 mOsm/kgH<sub>2</sub>O respectively. No other medications caused this hyponatremia and after normal saline infusion, her hyponatremia did not improve so SIADH was suspected as the most likely cause of hyponatremia.

Plain film of the abdomen (Figure 1) revealed generalized small bowel dilatation and CT scan of the whole abdomen (Figure 2) revealed segmental circumferential bowel wall thickening, involving about 12 cm



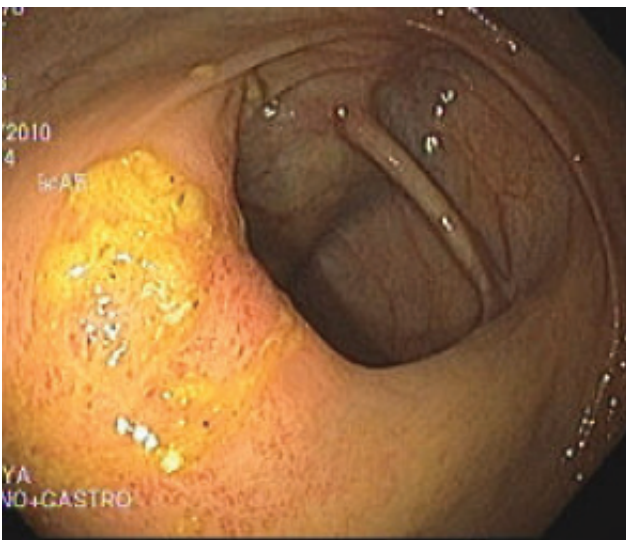
**Figure 1.** Plain film of the abdomen revealed generalized small bowel dilatation and mucosal swelling at distal small bowel.



**Figure 2.** CT scan of the whole abdomen revealed segmental circumferential bowel wall thickening, involving about 12 cm of terminal ileum and IC valve, measuring about 0.6 cm in thickness.



**Figure 3.** Terminal ileum was narrowed and showed edematous mucosa.

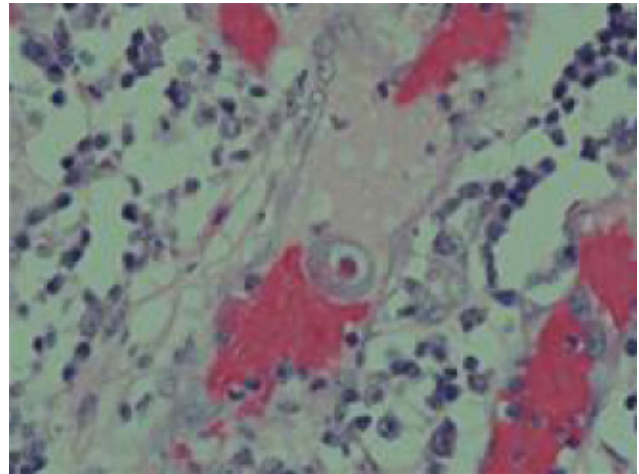


**Figure 4.** Cecum and ileocecal valve showed obvious inflammation and some scarring mucosa.

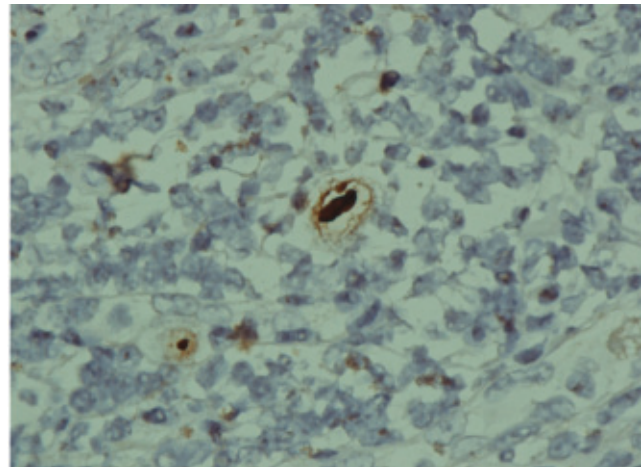
of terminal ileum and IC valve, measuring about 0.6 cm in thickness. CXR revealed no any definite pulmonary infiltration. But from CT scan of the whole abdomen revealed 3 mm nodule at the right middle lobe of lung that was too small to characterized with no 3-month interval change and was under surveillance.

Colonoscopy revealed edematous terminal ileal mucosa which could not be fully intubated, erythematous and swelling mucosa at ileocecal valve. (Figure 3,4) The cecum showed patchy erythema and erosions.

Blood samples was analyzed for viral serology



**Figure 5.** The histologic findings revealed foci of enlarged endothelial and epithelial cells with intranuclear and intracytoplasmic eosinophilic inclusions.



**Figure 6.** In situ hybridization of CMV was positive.

and CMV viral load was found to be less than 600 copies/mL, CMV IgM and anti-HIV were negative, but CMV IgG was positive.

Pathological finding from the endoscopic biopsies revealed intranuclear inclusion bodies (Figure 5) that were positive for in-situ hybridization of CMV (Figure 6).

### Treatment

She received intravenous ganciclovir but eventually, after administration of ganciclovir for 7 days, she developed clinical gut obstruction and her nasogastric content became feculent. Exploratory laparotomy was performed and revealed nearly complete terminal ileal



**Figure 7.** The gross findings showed a segment of thickening wall corresponded with luminal stenosis. This segment measured 10 cm long and the mucosa revealed ulcers, fissures, greenish exudative coat along with severe acute inflammation and granulation tissue extending into submucosa. The inflammatory process produced transmural thickening.

obstruction from ileal stenosis (Figure 7) and terminal ilectomy was performed. The histopathology from the resected specimen confirmed CMV infection as the sole pathogen.

### Outcome and follow-up

After the terminal ilectomy intravenous ganciclovir was administered for 3 weeks followed by oral valciclovir for a further 3 weeks. Her intermittent fever subsided and she had no subsequent abdominal discomfort. Her well-being improved along with the abnormal blood chemistry; her hyponatremia from SIADH and hypoalbuminemia normalised. Colonoscopy was repeated and revealed no residual inflammation. Random biopsies performed at the terminal ileum, ileocecal valve and cecum, did not show any viral cytopathologic changes.

### DISCUSSION

CMV is a significant pathogen in immunocompromised hosts such as in AIDS and post organ transplant patients. In contrast, CMV disease with organ-specific complications is uncommon in immunocompetent host and the clinical course is usually mild. However, severe manifestations such as colitis, meningo-encephalitis, hepatitis, myocarditis and pneu-

monitis have been increasingly reported<sup>(6)</sup>. The elderly, who are suspected of having relative immunodeficiency, may be predisposed to infections with various pathogens including cytomegalovirus<sup>(7)</sup>. Nevertheless, it is not necessarily the elderly that are infected. The average age of immunocompetent patients who have CMV colitis was reported to be 61-69 years<sup>(7,8)</sup>.

CMV gastrointestinal tract infections can cause strictures of organs involved, including esophageal, small intestine, ileal and colonic strictures<sup>(9-15)</sup>.

Our patient was found to have hyponatremia which was thought to be related to SIADH. As far as we are aware, this case is the second case reporting an association between hyponatremia/SIADH and CMV infection<sup>(17)</sup>. The causes of SIADH are pulmonary, CNS, malignant diseases, drugs and other causes such as stress, severe nausea and pain<sup>(16)</sup>. Assessment and investigations in our patient revealed only nausea and one episode of vomiting to account for the stimulation of ADH secretion. Her hyponatremia disappeared after this patient had her operation and received intravenous ganciclovir for 3 weeks.

This case demonstrates that CMV should be suspected in cases of terminal ileitis even in the setting of immunocompetent hosts with stricturing lesion.

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