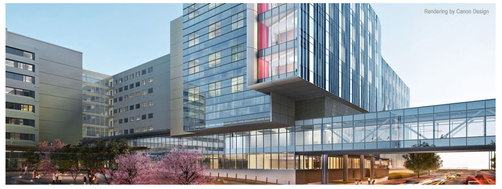

CMV Ileitis: An Unusual but Important Cause of Acute GI Bleeding in COVID-19 Patients on ECMO

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Background

Cytomegalovirus (CMV) can affect many organ systems, including the gastrointestinal tract. There are few cases that report ileal involvement due to CMV in patients with COVID-19 on extracorporeal membrane oxygenation (ECMO). To our knowledge, these are two of the first documented cases of hemorrhagic CMV ileitis in patients with severe COVID-19 who received ECMO.

Case Descriptions

Case 1: A 55-year-old male with hypertension, asthma, gastro-esophageal reflux disease and gout was hospitalized for worsening acute hypoxemic respiratory failure secondary to COVID-19 requiring ECMO.

- Progressive lactic acidosis raised concerns for bowel ischemia. Flexible sigmoidoscopy revealed large amounts of blood and clots, suggestive of colonic ischemia in the rectosigmoid region.
- Patient developed further gastrointestinal hemorrhage warranting colonoscopy and ileoscopy which revealed areas of extensive ulceration and active bleeding within the terminal ileum (Figure 1a, 1b).
- Biopsies were positive for CMV, and ganciclovir was initiated.
- Despite medical intervention, the patient succumbed to multiorgan failure and expired.

Case 2: A 62-year-old male with hypertension and obesity was transferred to our facility for ECMO in the setting of worsening acute hypoxemic respiratory failure secondary to COVID-19.

- An episode of melena prompted endoscopic evaluation. EGD revealed ulcerations in the body of the stomach without active bleeding or visible vessels.
- Patient developed rectal bleeding and colonoscopy revealed moderate amounts of fresh and clotted blood throughout the colon with areas of severe ulcerations in the ileum (Figure 1c).
- Ganciclovir was started empirically, biopsies subsequently confirmed CMV.
- The patient developed multisystem organ failure and expired.

Endoscopic Findings

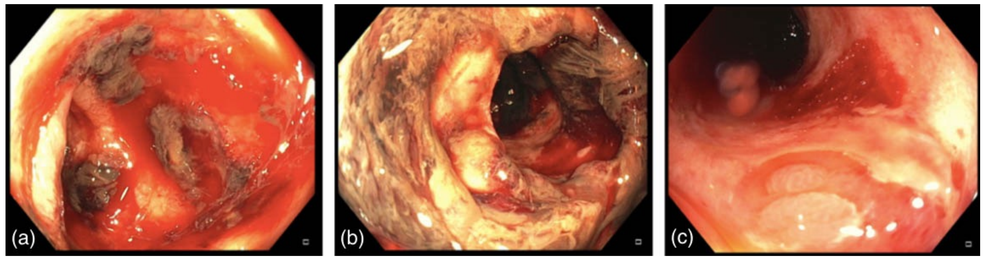

Figure 1a-c: Colonoscopic imaging of mucosal abnormalities of the terminal ileum in patients with CMV. The following figures demonstrate the macroscopic changes to the gastrointestinal tract in those with severe CMV infection. **Figure 1a** and **Figure 1b** show severe mucosal ulceration with active bleeding and old blood within the terminal ileum. **Figure 1c** shows focal ulcerations with visible vessels and fresh blood within the terminal ileum.

Discussion

CMV classically involves the esophagus and colon in those who are immunocompromised. These two cases demonstrate atypical presentations of CMV.

- **Concern for transient immunosuppression?**
  - Both patients had ileal involvement and neither had a known history of immunocompromise, including negative HIV testing.
  - Both patients received high dose steroids and remdesivir as part of treatment for COVID-19.
  - This raises concern that transient immunosuppression may have led to primary CMV infection or reactivation of previously dormant CMV.
- **Association between COVID and CMV?**
  - Can the pathogenesis of COVID lead to the activation of CMV or create a synergistic effect?
- **Early consideration in differential?**
  - Because mortality is high in this population, ileal disease secondary to CMV should be considered as a cause of gastrointestinal hemorrhage in order for therapy to be initiated early.

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