

Cytomegalovirus infection masquerading as gastric carcinoma in an immune-compromised host

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Abstract

A 63-year-old man post-renal transplantation on immunosuppressants presented with reflux symptoms for one month. Significant medical history included a history of upper gastrointestinal bleeding, insulin-dependent diabetes mellitus and ischemic heart disease. Barium meal showed a large plaque-like lesion along greater curvature suspicious of malignancy. Gastroscopy revealed a large polypoidal gastric mass which was biopsied. Histological result showed numerous cytomegalovirus (CMV) viral inclusions within hyperplastic gastric mucosa without dysplasia or neoplasm. The findings were consistent with CMV gastric polyp. Following treatment with antiviral therapy and reduction in immunosuppressants, the CMV gastric polyp became smaller. This highlights the importance of considering CMV as a differential of gastric mass in an immunosuppressed host as treatment options varied between surgery and antiviral therapy.

Keywords

Cytomegalovirus, gastric cancer, endoscopy

Introduction

CMV disease continues to be a problem in the solid organ transplant (SOT) recipient. The gastrointestinal (GI) tract is one of the commonest sites of end-organ involvement. CMV disease of the GI tract may manifest as esophagitis, gastric ulcers and colitis.¹ In the era of effective antiviral prophylaxis and pre-emptive therapy, late-onset CMV disease has emerged as a problem.² At the same time, it is increasingly recognized that renal transplant (RTx) recipients are at higher risk of gastric carcinoma.^{3,4} We describe a RTx recipient in whom CMV masqueraded as gastric carcinoma.

Case report

The patient was a 63-year-old man with a history of ischemic heart disease and long-standing insulin-dependent diabetes mellitus complicated by diabetic nephropathy who subsequently underwent diseased donor renal transplant in China in 2009. Other significant history of note includes an episode of gastrointestinal bleeding from an ulcerated gastric polyp in 2014. He presented this time with reflux symptoms of one month's duration without alarm features. Barium swallow revealed normal esophagus and a large plaque-like lesion (62mm in diameter and 8mm in depth) in the greater

curvature with puckering of gastric outline suspicious of malignancy (Figure 1). Gastroscopy performed showed absence of esophagitis. A polypoidal lesion suspicious of malignancy based on barium meal was detected along greater curve. Narrow band imaging demonstrates a hypervascular polypoidal lesion with distorted pit-pattern suspicious of malignancy (Figures 2 and 3). The biopsy result of the suspicious gastric mass revealed multiple cytomegalovirus (CMV) inclusions highlighted by immunohistochemistry (Figures 4 and 5). Diagnosis of the CMV gastric polyp was made. The patient was treated with eight weeks of antiviral therapy (intravenous ganciclovir followed by oral valganciclovir) and the dose of immune suppressants was reduced. His reflux symptoms resolved after antiviral treatment. Repeat

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Figure 1. Barium swallow revealed a large plaque-like lesion (62mm in diameter and 8mm in depth) in the greater curvature with puckering of gastric outline suspicious of malignancy.

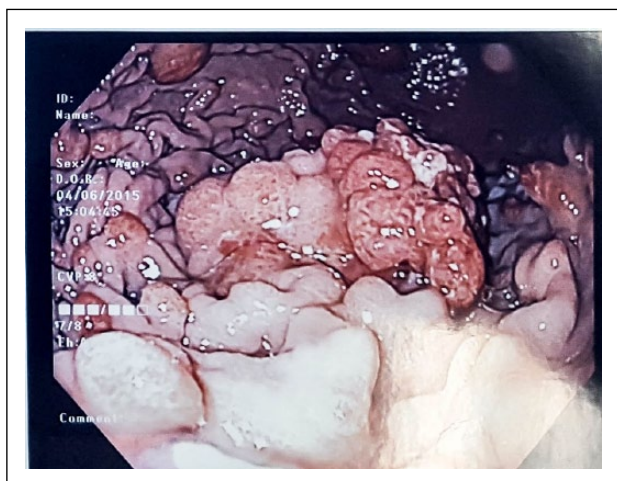


Figure 2. Gastroscopy performed showed a polypoid lesion suspicious of malignancy based on barium meal was detected along greater curve.

gastroscopy showed reduction in size of gastric polyps (Figure 6). Biopsy of gastric polyp showed clearance of CMV.

Discussion

CMV infection is usually asymptomatic in immunocompetent hosts. Very rarely, CMV infection can result in gastric ulcer⁵ in an immunocompetent host. GI tract involvement has been reported as the commonest end-organ manifestation of CMV infection in SOT recipients.⁶ However the diagnosis is not straightforward; a definite diagnosis requires a tissue biopsy.⁷

In clinical practice, blood CMV PCR is popular as an adjunct for the diagnosis of tissue-invasive disease. Indeed guidelines recognize this. The combination of signs and symptoms of organ involvement, plus the presence of CMV DNAemia, enables one to make a "probable" diagnosis of end-organ disease (e.g. CMV disease of the GI tract).⁸ However, it must be emphasized that CMV DNAemia is not

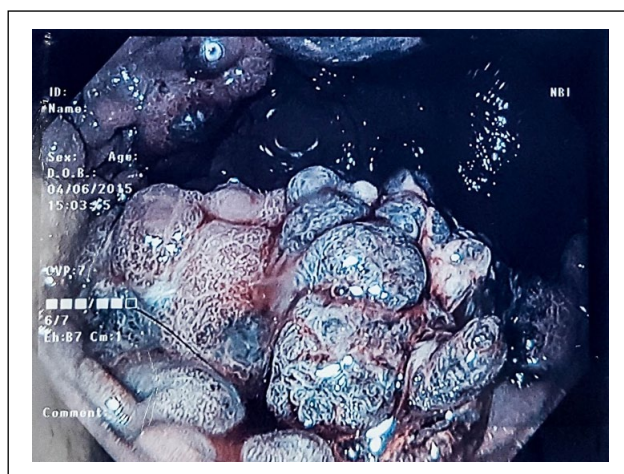


Figure 3. Narrow band imaging demonstrates a hypervascular polypoid lesion with distorted pit-pattern suspicious of malignancy.

universal in patients with CMV disease of the GI tract.⁹ In statistical terms, blood CMV PCR has sensitivity for GI involvement in the region of 58% to 85%. Our patient illustrates this well – he had biopsy-proven CMV in the stomach, but no circulating CMV DNA.

In our patient, the radiological and the gastroscopic features were worrying for a gastric malignancy. Malignancies are known complications of long-term immunosuppression. Although the classical malignancy among SOT recipients is post-transplant lymphoproliferative disease, solid tumors are also seen. Among renal transplant recipients, the rates of viral-related malignancies including cervical carcinoma, Kaposi sarcoma and non-Hodgkin lymphoma are higher than in the general population.¹⁰ This higher incidence of malignancies after renal transplant has contributed to significant post-transplant mortality. Malignancy was the third commonest cause of death following renal transplant after cardiovascular mortality and infection.¹¹

Gastric carcinoma is the third commonest cancer and second commonest cause of cancer death in Asia.¹² It was estimated that 952,000 people were diagnosed with gastric carcinoma in 2012, with 60% in China, Korea and Japan. Interestingly, a higher incidence of gastric carcinoma was reported among renal transplant recipients in Korea (OR=3.44 among males and 8.33 among females) as compared to the general population.¹³ There are no data on the incidence of gastric carcinoma following renal transplant in Singapore. But the radiologic and the gastroscopic features, in the setting of immunosuppression, mean that exclusion of a common malignancy is crucial.

As it turned out, the patient had CMV disease of the stomach. Although a surprising finding, given the radiologic and the gastroscopic features, this is not unheard of. An Italian case series reported three cases of CMV gastric polyps over a period of 10 years.¹⁴ Similar findings have also been reported in the East.^{13–17}

As noted, histology is the gold standard for the diagnosis of tissue-invasive CMV disease. Outside the field of transplantation, however, some controversy exists over the significance of CMV inclusion bodies seen on histology.¹⁸ The late occurrence of CMV infection in this patient, and the rather mild

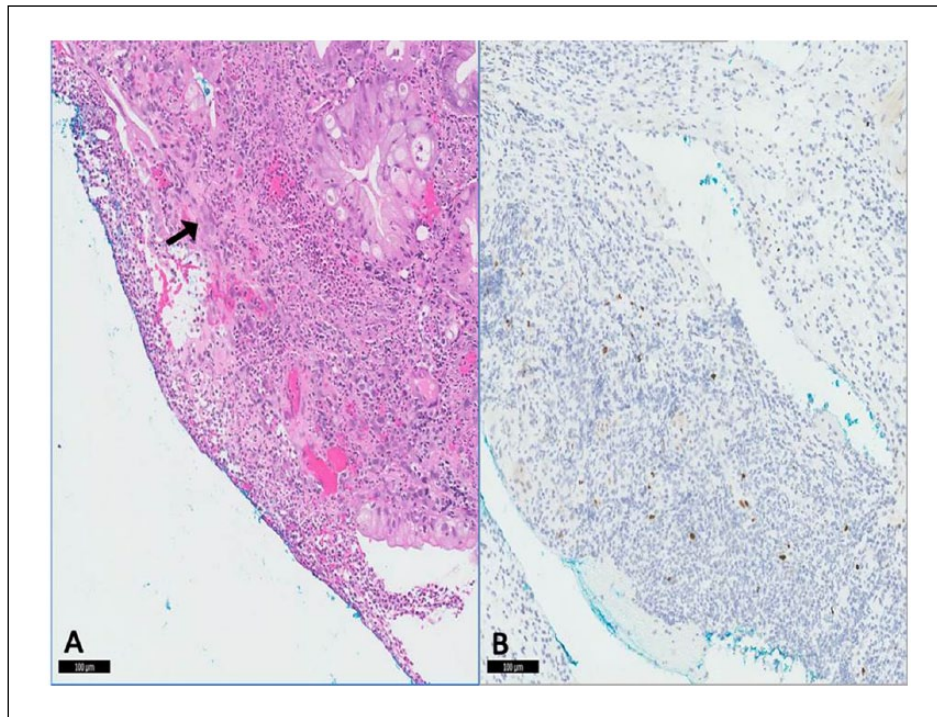


Figure 4. Biopsy result of suspicious gastric mass revealed multiple cytomegalovirus (CMV) inclusions highlighted by immunohistochemistry.

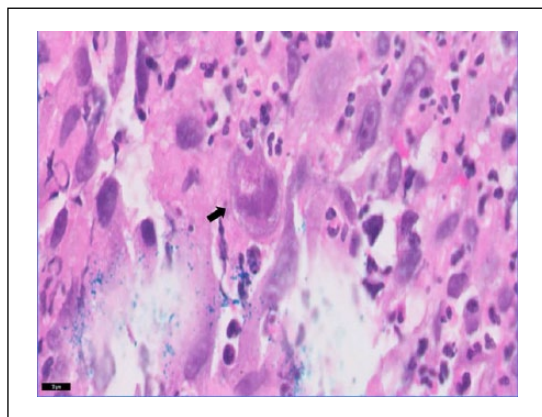


Figure 5. Owl's eye appearance of CMV inclusion bodies.

symptoms, make one wonder if the bystander theory might just be appropriate in this patient. CMV disease occurring years after transplant has been reported, usually after a “stressor”, which in our patient's case was likely his initial gastrointestinal bleeding.¹⁹ Upon completion of treatment, we demonstrated improvement in endoscopic appearance and disappearance of inclusion. We submit that treating him for CMV gastric polyp was an appropriate course of action. Persistence of CMV gastric polyp after antiviral therapy made CMV infection of existing gastric polyp a more likely diagnosis in this case.

In conclusion, we demonstrate an uncommon presentation of CMV infection as large polypoidal gastric polyps mimicking gastric carcinoma – in an immunocompromised patient. Histology and careful consideration of the clinical context are

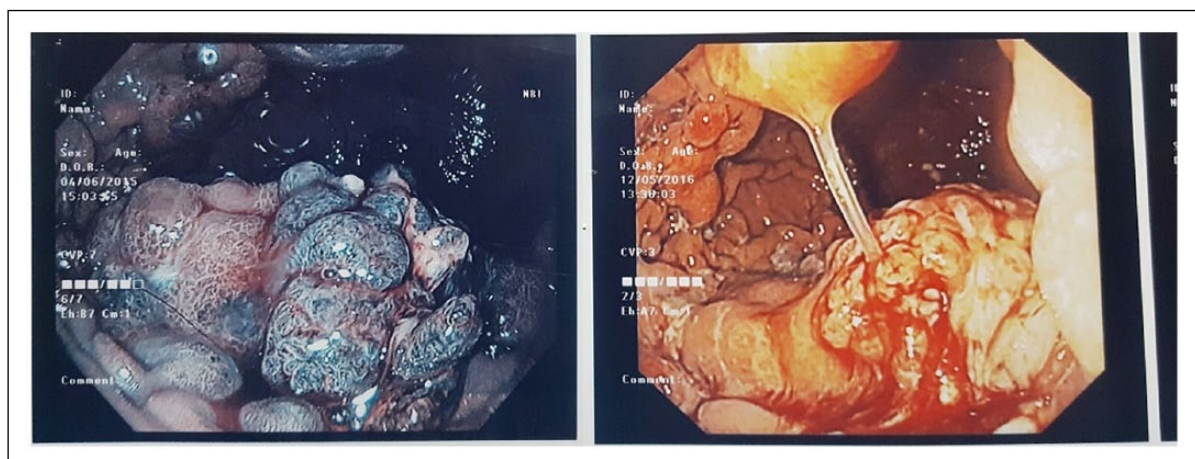


Figure 6. Repeat gastroscopy with biopsy of gastric polyps showed reduction in size of gastric polyps and clearance of CMV.

crucial to a successful treatment outcome. This case highlights that CMV may present as polypoidal lesions in organ transplant recipients.

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Informed consent

Obtained from patient.

Authors' contributions

Concept & Design – WYJ; Supervision – TBH, SM; Materials – TBH, SM, LWQ; Analysis and/or Interpretation – WJY, TBH, LWQ; Literature search – WJY, TBH; Writing Manuscript – WYJ, TBH, LWQ; Critical Review – TBH, LWQ, SM.

Declaration of conflicting interests

None declared.

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