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CASE REPORT | COLON

Spindle Cell Pseudotumor Mimicking Malignancy in an Immunocompetent Patient with a Left Ventricular Assist Device

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ABSTRACT

Cytomegalovirus (CMV)-induced pseudotumors, or mass-like lesions in the colon, are a rare entity. We report a case of CMV-related spindle cell pseudotumor in an immunocompetent patient with a left ventricular assist device. This case highlights the importance of considering CMV-induced inflammatory pseudotumor when evaluating tumorous lesions in the colon, as well as the importance of appropriate diagnostic work-up, including proper biopsy technique and meticulous review of the pathology.

INTRODUCTION

Cytomegalovirus (CMV) infection can occur throughout the gastrointestinal (GI) tract, with the most commonly affected sites being the ileocecal and recto-sigmoid regions, followed by the esophagus.[1,2] CMV rarely presents as an intraluminal mass-like lesion, with most reported cases of such "pseudotumors" occurring in the background of immunosuppression, such as with human immunodeficiency virus (HIV) and organ transplantation.[1-3] Recognizing that CMV can induce pseudotumor formation is important because these lesions are responsive to anti-retroviral therapy and, in some cases, have been reported to resolve spontaneously.

CASE REPORT

A 63-year-old man with no past medical history was transferred to our institution for management of cardiogenic shock. On arrival, he was on post cardiac arrest hypothermia protocol with an Impella heart pump device (ABIOMED, Danvers, MA) in place. He was placed on venous-arterial extracorporeal membrane oxygenation. He began having multiple episodes of bloody diarrhea. Computed tomography showed pancolitis, which was most severe around the cecum (Figure 1).

Extracorporeal membrane oxygenation was subsequently replaced with a left ventricular assist device (LVAD). Due to persistent hematochezia, an exploratory laparotomy was performed during LVAD placement to evaluate for ischemic bowel; none was found. His course was further complicated by acute renal failure, later requiring continuous dialysis. While on systemic anticoagulation to prevent LVAD pump thrombosis, he had recurrent GI bleeding associated with a drop in his hemoglobin.

Esophagogastroduodenoscopy and colonoscopy were performed. Multiple firm masses ranging in size from 0.5 cm to 1.5 cm were noted in the ascending colon and hepatic flexure (Figure 2). Initial pathology of the biopsy

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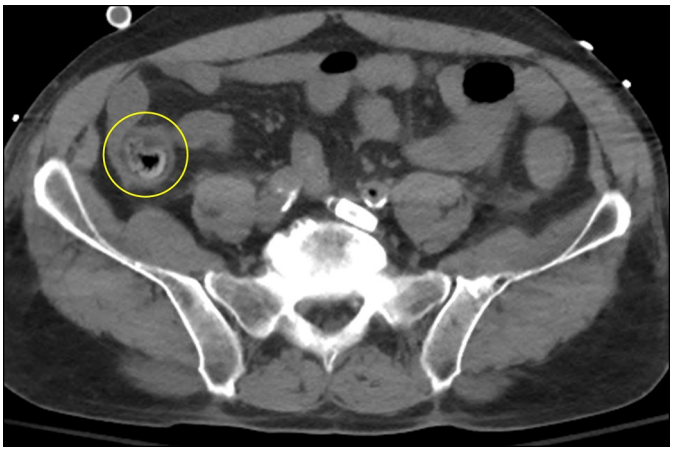

Figure 1. Computed tomography scan (coronal view) revealing pancolitis, most severe around the cecum (circle).

was read as GI stromal tumors (GIST), with a high mitotic index and positive for CD117. The patient was started on tyrosine kinase inhibitor therapy with imatinib.

He continued to have severe lower GI bleeding associated with hemodynamic instability, and he underwent a laparoscopic subtotal colectomy with end ileostomy. Angiography with embolization was not pursued because the bleeding was coming from multiple sites on endoscopy, and the initial concern was for malignancy.

The colectomy specimens, including the prior biopsy sites, were thoroughly examined, and no spindle cell lesions were present. This prompted a review of the original biopsy that had received a diagnosis of GIST. The initial CD117 was, in fact, a false positive. Repeat CD117, DOG1, CD34, and smooth

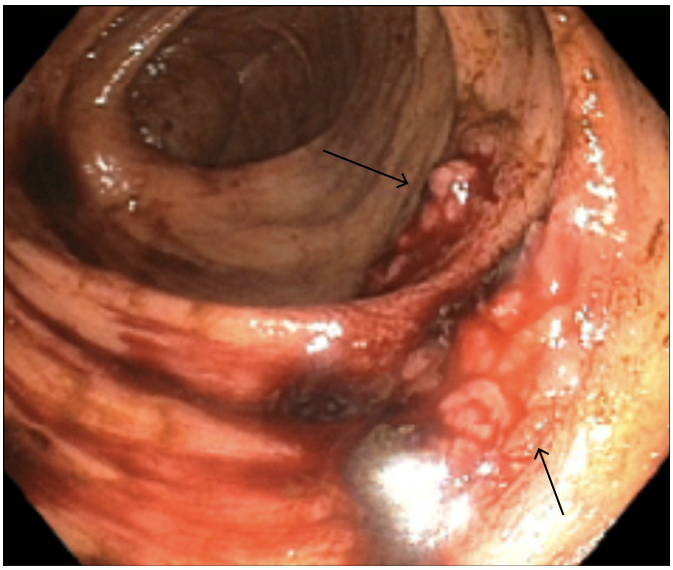

Figure 2. Endoscopy showing multiple, medium-sized, irregular ulcers with edematous, friable mucosa and nodularity in the ascending colon, splenic flexure, sigmoid colon, and rectum (arrows).

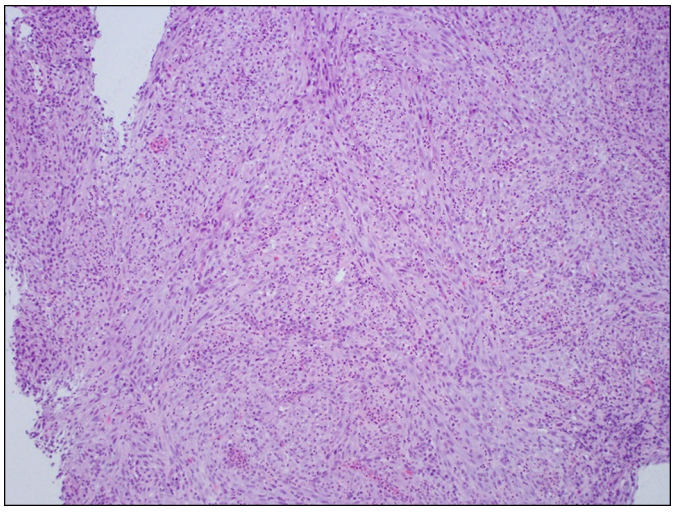

Figure 3. Hematoxylin and eosin staining (400×) of endoscopic biopsy specimens showing cellular tissue fragments composed of spindle cells arranged in fascicles, as well as inflammatory cells.

muscle actin (SMA) were negative, whereas Ki-67 showed a high proliferative rate.

Examination of multiple levels of the initial biopsy specimen showed 2 cellular fragments composed of plump spindle cells arranged in fascicles with small nucleoli and increased mitosis (Figure 3). Infrequent large smudgy cells with cytoplasmic inclusions were noticed, and these stained positive with CMV immunostain (Figure 4). The pathology report was amended to a diagnosis of CMV-associated spindle cell pseudotumor. Thorough examination of the colectomy specimen showed no residual spindle cell lesions, which suggested that the lesions had self-resolved. Workup for underlying immunodeficiency was unrevealing, including negative HIV testing and normal levels of immunoglobulins IgA, IgG, and IgM. The patient underwent a dual heart and kidney transplant and is currently awaiting reversal of his ileostomy.

DISCUSSION

CMV is a member of the *Herpesviridae* viruses with a worldwide seroprevalence ranging from 60–100%.[4] It is transmitted person to person through bodily fluids such as saliva, respiratory droplets, and sexual contact. In immunocompetent

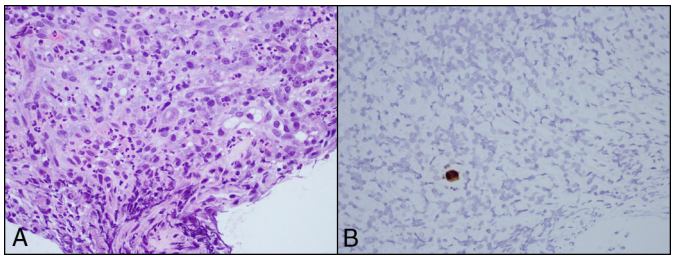

Figure 4. (A) A large, smudgy cell on hematoxylin and eosin staining (400×). (B) Immunohistochemical staining for cytomegalovirus revealed positive cells with inclusion.

patients, it may be the result of a primary infection or a secondary reactivation due to impaired T-cell function. It is often asymptomatic or runs a benign, self-limited course with a mild mononucleosis-like syndrome. Risk factors for CMV disease include immune-modulating conditions such as diabetes mellitus, renal failure, severe sepsis, and post-surgical states.[5,6]

The GI tract is a frequent site of CMV infection, and such infections most commonly manifest as erosive colitis or esophagogastritis. CMV rarely manifests as tumefactive inflammatory masses, with only a handful of cases reported in immunocompetent patients.[7,8] Thickening of the bowel wall caused by sub-mucosal edema, exuberant granulation tissue, inflammation, and fibrosis lead to the pseudotumor appearance.[9]

Spindle cell lesions of the GI tract, such as the CMV pseudotumor, are relatively uncommon. The differential includes GIST, leiomyomas, schwannomas, desmoid tumors, inflammatory myofibroblastic tumors, inflammatory fibroid polyps, and solitary fibrous tumors. Due to significant morphologic overlap between these lesions, they are difficult to differentiate. Immunohistochemical markers, such as receptor tyrosine kinase (c-kit) inhibitors, platelet-derived growth factor receptor α, CD34, and SMA, are often necessary for accurate diagnosis.[10] The histopathologic hallmark of CMV infection is the central density of eosinophilic inclusions with a surrounding halo, commonly known as the "owl's eye."[1,9,11]

Abdominal pain with a non-obstructing mass is the most commonly reported presentation; an obstructing mass and GI bleeding is less likely. Abdominal computed tomography and a barium enema are useful for diagnosing CMV colitis, but these are non-specific. CMV pseudotumors typically appear as annular regions of luminal narrowing and poor distensibility, leading to an apple-core appearance.

Endoscopic findings typically include friable lesions or a large intraluminal polypoid mass, associated with ulcers or erosions. The gold standard for diagnosis remains a mucosal biopsy showing the presence of CMV. The location of the CMV virus is often in the deep tissue, requiring a biopsy deep enough to gather endothelial cells and fibroblasts in the lamina propria to ensure it is not missed.[12]

CMV-induced pseudotumor often responds to intravenous antiviral therapy and has even been reported to resolve spontaneously.[13] Surgery should be reserved for patients whose lesions fail to respond to medical therapy or those with obstruction or refractory bleeding. It is important to consider such pseudotumors in the differential of GI mass lesions, even in immunocompetent patients, as they are responsive to medical therapy and often can be treated without unnecessary surgical intervention.

DISCLOSURES

Author contributions: All authors contributed equally to the manuscript. B. Dworkin is the article guarantor.

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Informed consent was obtained for this case report.

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REFERENCES

1. Shi J, McKenna BJ. Cytomegalovirus-induced inflammatory pseudotumour. *Pathology*. 2016;48(7):750–2.
2. Jacob S, Zayyani NR. Cytomegalovirus colitis masquerading as rectal malignancy in an immunocompetent patient. *Indian J Pathol Microbiol*. 2015;58(1):80–2.
3. Kawasaki S, Osawa S, Sugimoto K, et al. Cecal vanishing tumor associated with cytomegalovirus infection in an immunocompetent elderly adult. *World J Gastrointest Oncol*. 2010;2(11):417–20.
4. Rafailidis PI, Mourtzoukou EG, Varbobitis IC. Severe cytomegalovirus infection in apparently immunocompetent patients: A systematic review. *Virol J*. 2008;5:47.
5. Maiorana A, Torricelli P, Giusti F, Bellini N. Pseudoneoplastic appearance of cytomegalovirus-associated colitis in nonimmunocompromised patients: Report of 2 cases. *Clin Infect Dis*. 2003;37(5):e68–e71.
6. Chetty R, Roskell DE. Cytomegalovirus infection in the gastrointestinal tract. *J Clin Pathol*. 1994;47(11):968–72.
7. Szary N, Kuwajima V, Jiang P. Cytomegalovirus colitis in an immunocompetent host: A case report and review of the literature. *Internet J Gastroenterol*. 2008;14:3028–37.
8. De Jesus A, Grossman SA, Paun O. Cytomegalovirus associated colonic pseudotumor: A consequence of iatrogenic immunosuppression in a patient with primary brain tumor receiving radiation and temozolomide. *J Neurooncol*. 2009;94(3):445–8.
9. Kelesidis T, Tozzi S, Mitty R, Worthington M, Fleisher J. Cytomegalovirus pseudotumor of the duodenum in a patient with AIDS: An unrecognized and potentially treatable clinical entity. *Int J Infect Dis*. 2010;14(4):e274–e282.
10. Virani N, Pang J, Lew M. Cytologic and immunohistochemical evaluation of low-grade spindle cell lesions of the gastrointestinal tract. *Arch Pathol Lab Med*. 2016;140(10):1038–44.
11. Tan CB, Vardaros M, Prasad A, et al. Cytomegalovirus infection of the colon presenting as a mass-like lesion. *Case Rep Gastroenterol*. 2012;6(2):266–72.
12. Agrawal A, Jain D, Siddique S. Overt lower gastrointestinal bleeding and pseudotumor: A rare presentation of cytomegalovirus infection. *Case Rep Med*. 2017;2017:9732967.
13. Vegunta AS, Dasar SK, Joshi SK, Rao RV. Spontaneous partial vanishing cytomegalovirus pseudotumour of colon in an immunocompetent patient. *J Clin Diagn Res*. 2015;9(8):TD07–TD09.