Cytomegalovirus Appendicitis in a Patient With Human Immunodeficiency Virus Infection

Case Report and Review of the Literature

Leigh A. Neumayer, MD; Rosemary Makar, MD; Neil M. Ampel, MD; Charles F. Zukoski, MD

- We report a case of chronic abdominal pain with subsequent development of acute right lower quadrant tenderness in a patient infected with the human immunodeficiency virus. Ultrasonography and computed tomography revealed an enlarged appendix. On subsequent laparotomy, the patient was found to have appendicitis due to cytomegalovirus. Six additional cases of this infection were identified in a review of the literature. The course of cytomegalovirus appendicitis in these patients was prolonged and atypical compared with noncompromised patients with acute appendicitis. Because perforation may occur, surgery is advocated when this diagnosis is suspected in the patient infected with human immunodeficiency virus. (Arch Surg. 1993;128:467-468)

Infection of the gastrointestinal tract with cytomegalovirus (CMV) has become an increasingly recognized complication in patients with underlying immunodeficiency states, particularly those infected with the human immunodeficiency virus (HIV). Until recently, there have been only rare reports of involvement of the appendix in this disease process. However, during the last 2 years there have been four case reports describing patients with appendicitis secondary to CMV infection and one other report containing two cases. In this report we describe our own patient and review the literature on the subject.

REPORT OF A CASE

A 38-year-old man was admitted to the hospital with a 2-month history of crampy abdominal pain that had localized to the right lower quadrant for the previous 10 days. He described the pain as severe and only relieved by lying still. He reported a 1-year history of diarrhea, weight loss, and decreased appetite. One month prior to admission, the patient had tested positive for infection with HIV. On physical examination, he was febrile and was noted to have tenderness at McBurney's point, but there was no abdominal rebound. Ultrasonography of the right lower quadrant showed an enlarged appendix and computed tomography of the abdomen revealed an edematous appendix and cecum but no evidence of abscess. The patient's liver, spleen, and abdominal lymph nodes were of normal size. His peripheral white blood cell count was 4.2×10⁹/L, mature polymorphonuclear leukocytes were 0.46, and band cells were 0.09. The CD4 lymphocyte count was 0.05×10⁹/L (50/µL).

Because the patient was 10 days into his course of symptoms and did not have peritoneal signs, he was given nothing by mouth, was given intravenous cefoxitin, and was observed carefully. The pain improved during the next few days and by hospital day 3 the patient was tolerating clear liquids. The results of the abdominal examination also improved to no tenderness. However, when the patient's diet was advanced to regular on hospital day 6, his abdominal pain recurred and his right lower quadrant became much more tender to palpation. A repeated computed tomographic scan again revealed cecal and appendiceal edema, and possibly a periappendiceal abscess. The patient underwent laparotomy, and an enlarged appendix was removed. There was no evidence of intra-abdominal abscess or appendiceal perforation.

The patient did well after surgery. Once the pathologic findings were known a regimen consisting of 250 mg of ganciclovir administered intravenously twice daily, 200 mg of dideoxyinosine administered orally twice daily, and trimethoprim-sulfamethoxazole administered three times a week was begun to prevent Pneumocystis carinii pneumonia. The patient tolerated this regimen well, and the ganciclovir therapy was discontinued 6 weeks later. The patient has continued to do well since then.

On pathologic examination, the appendix grossly was firm and edematous with no fibrinous serosal coating. It was not obstructed. Microscopic sections demonstrated an intact mucosa with a transmural inflammatory infiltrate. This was composed mainly of lymphocytes, histiocytes, and scattered plasma cells and only a few neutrophils. Intracellular and intracytoplasmic inclusions were noted within the intact mucosa, in endothelial cells, and in some of the lymphocytes and histiocytes in the submucosal area. Immunohistochemical staining for CMV using monoclonal murine anti-CMV antibody (DAKO, Carpenteria, Calif) was strongly positive within the tissue (Figure). No granulomas were noted and bacterial cultures were negative.

COMMENT

Cytomegalovirus infection in the general population is extremely common. Prevalence increases with age so that more than 80% of adults older than age 35 years are infect...
ed.\textsuperscript{8} Despite this, clinically recognized disease due to CMV is uncommon.\textsuperscript{9} However, in immunocompromised patients, including those infected with HIV, CMV is a significant cause of morbidity and mortality. In fact, CMV infection is the most serious and most common specific opportunistic infection of the gastrointestinal tract in patients with the acquired immunodeficiency syndrome. While colitis, presenting with abdominal pain, fever, and hematochezia, is the most frequent manifestation of CMV gastrointestinal infection in this group of patients, virtually all the organs of the alimentary tract may be involved.\textsuperscript{1}

Despite this, CMV appendicitis has only recently been recognized in patients infected with HIV. Tucker and colleagues\textsuperscript{2} reported the first case, to our knowledge, in 1990. Their patient presented with fever, diarrhea, and increasing abdominal pain for several weeks prior to hospital admission. The patient was ultimately found to have a perforated appendix with a periappendiceal abscess due to \textit{Escherichia coli}. Intranuclear inclusions indicative of CMV infection were found throughout the mucosa and submucosa of the appendix. Since then, three additional cases have been reported.\textsuperscript{3-5} In addition, Davidson and colleagues\textsuperscript{5} reported their experience with emergency laparotomy during a 3-year period in patients with acquired immunodeficiency syndrome. Of 28 patients, five underwent surgery for appendicitis. In two of these patients appendicitis was associated with CMV infection. An additional six patients in that study had CMV colitis.

Our patient as well as the other four patients described individually\textsuperscript{2-5} have had a more prolonged prehospital course than would be expected with acute bacterial appendicitis in the noncompromised patient. The duration of symptoms was from 16 hours to 3 weeks, with a median duration of 1 week. The symptoms often consisted of crampy abdominal pain that later localized to the right lower quadrant. Three of the patients had a history of or presented with fever, with temperatures sometimes as high as 40.9°C, and two of the patients had diarrhea. Abdominal examination revealed localized right lower quadrant tenderness with peritoneal signs in all patients just prior to surgery. Abdominal computed tomography revealed edema of the appendix in both patients in whom they were done. Two patients were found to have appendiceal perforation at operation. All five had CMV inclusion bodies noted on histologic examination.

Although not reported extensively in the literature, appendicitis is becoming an increasingly recognized manifestation of CMV infection in the HIV-infected patient. Because of the atypical presentation, there may be a search for a diagnosis other than appendicitis. Ultrasonography or computed tomography may be helpful if either reveals an edematous appendix. Since there is a real risk of perforation, we advocate immediate surgery if this diagnosis is suspected. Cytomegalovirus appendicitis should be considered in any HIV-infected patient who presents with localized right lower quadrant tenderness.

References