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CASE REPORT | INFLAMMATORY BOWEL DISEASE

New Diagnosis of Acquired Immunodeficiency Syndrome in a Patient With Crohn's Disease

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ABSTRACT

There are limited data on the natural history of Crohn's disease (CD) in the presence of human immunodeficiency virus infection and the safety of available treatments. We report a patient with CD who presented with pneumocystis pneumonia secondary to newly diagnosed acquired immunodeficiency syndrome. One month before his admission, his gastrointestinal symptoms were well controlled without treatment but gradually reappeared after antiretroviral therapy was initiated. Clinical remission was achieved with vedolizumab treatment. We review the management challenges of CD in a patient with human immunodeficiency virus and describe the unique mechanism of anti-α4β7 integrin therapy in this setting.

INTRODUCTION

Management of patients with both inflammatory bowel disease (IBD) and human immunodeficiency virus (HIV) infection can be challenging. There are limited data on the natural history of Crohn's disease (CD) in the presence of HIV infection and the safety of available treatments. We report a patient with CD who presented with pneumocystis pneumonia secondary to acquired immunodeficiency syndrome (AIDS) and discuss the treatment options in this setting.

CASE REPORT

A 30-year-old white nonsmoking man with a history of inflammatory ileocolonic CD presented with 5 weeks of cough and low-grade fever. He was diagnosed with CD 1 year before his admission when he presented with increased bowel movements and hematochezia. He was treated with adalimumab and methotrexate. Six months before his admission, adalimumab dose interval was shortened to 40 mg every week because of disease relapse with a low drug level (4.6 μg/mL). Subsequently, clinical and endoscopic remission were achieved. Three months later, after 2 outbreaks of herpes zoster, methotrexate was discontinued.

Two months before his admission, he complained of persistent anal pain and discharge. Ileocolonoscopy showed no mucosal abnormalities. The mucosa of the distal 10 cm of rectum appeared scarred and biopsies revealed crypt distortion without active inflammation. Five weeks before his admission, the patient presented with progressive nonproductive cough, dyspnea, and fever. Adalimumab treatment was discontinued and he was treated with empiric antibiotics for suspected pneumonia without improvement. On admission, his temperature was 37.1 °C, heart rate 125 beats/min, respiratory rate 25/min, and oxygen saturation 96%. Physical examination revealed oral thrush and perianal erythematous lacerations. Remarkable laboratory results included lactate dehydrogenase 361 U/L, and C-reactive protein (CRP) 15 mg/L. Chest computed tomography demonstrated bilateral subpleural ground glass opacities. Bronchoalveolar lavage confirmed the diagnosis of pneumocystis pneumonia and cytomegalovirus pneumonia. Serology tests revealed previous exposure to syphilis and positive HIV-1 antibodies. CD4 count was 179 cells/μL and the viral load was 80,000 copies/mL. A rectal swab was positive for herpes simplex virus. A subsequent inquiry about his sexual history revealed same-sex intercourse. He denied any previous diagnosis or treatment for HIV. According to his report, 4 months before admission, although asymptomatic, he performed an unknown type of home HIV test, which was negative. Considering his advanced disease at presentation, this test was most likely false negative. After treatment of the pneumonia, antiretroviral therapy

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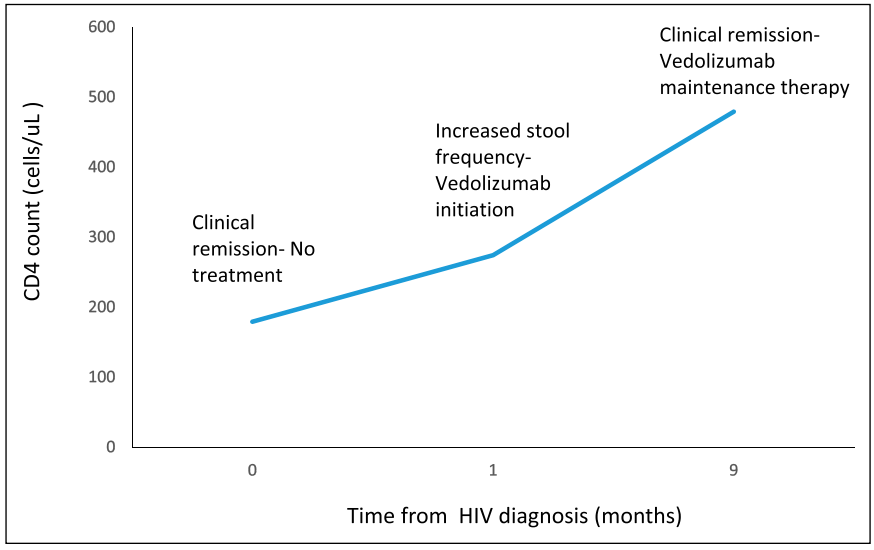

Figure 1. The patient's CD4 levels and gastrointestinal symptoms.

(ART) was initiated. Although, he was not treated for CD, his gastrointestinal symptoms remained stable. One month later, his CD4 count had increased to 274 cells/uL along with increased stool frequency and elevated CRP levels. After vedolizumab was initiated, his symptoms resolved and CRP level normalized; therefore, endoscopy was deferred (Figure 1). At the time of this report, he has been in clinical remission for 1 year.

DISCUSSION

There are limited data on the natural history of CD in the presence of HIV. Because the gut CD4 T-cells play a major role in CD pathogenesis and are depleted during HIV infection, it is reasonable to assume that a low CD4 count is associated with CD clinical remission. However, this association is not clear and several case reports have described the occurrence of CD activity with various CD4 counts ranging from 80 to 500 cells/mm^3.[1–3]

In the case presented, at the time of AIDS diagnosis, the patient's gastrointestinal symptoms were stable without treatment and reappeared in parallel to the increase in CD4 levels. The CD4 count remission hypothesis in patients with IBD with HIV was examined in a recent systematic review, which failed to support or reject the theory because of limited data.[4] The largest case-control study comparing the clinical course of IBD with or without concomitant HIV infection demonstrated a lower relapse rate per year among patients with IBD/HIV. In fact, those with CD4 counts lower than 500 cells/μL did not experience any disease relapse.[5]

Until recently, the medical armamentarium for patients with CD and HIV infection was limited to 5-ASA, antibiotics, and anti-tumor necrosis factor (TNF) therapy. Of interest, TNF alpha, a key mediator in the inflammatory cascade in CD, plays a role in HIV infection progression. HIV proteins target the TNF pathway and its activation affects HIV replication. Therefore, control of the TNF pathway was implied as a therapeutic target for controlling viral replication. However, treating patients with HIV with anti-TNF drugs have failed to show a beneficial effect.[6]

Several brief reports have described the efficacy and safety of anti-TNF therapy in patients with IBD/HIV. A recently published systematic review summarized 27 cases of patients with HIV treated with anti-TNF drugs for different autoimmune conditions and found the treatment effective and fairly safe with some suggested reservations. The authors recommended that anti-TNF drugs be prescribed to patients who are treated with ART and have a stable CD4 count at baseline. CD4 and viral load should be closely monitored. Also, latent tuberculosis and chronic active hepatitis B should be screened and treated if indicated. No clear association was found between CD4 counts and infectious complications.[7]

In recent years, there is a growing interest in the role of α4β7 integrin in HIV infection. α4β7 integrin mediates HIV binding to immune cells during acute infection, causing CD4 depletion in the gut.[8] Vedolizumab, an anti-α4β7 integrin antibody, given to primates before simian immunodeficiency virus (SIV) infection was effective in reducing the amount of SIV in the intestine and reducing the efficiency of mucosal transmission of SIV.[9] Moreover, supplementing ART with vedolizumab in primates already infected with SIV, sustained the virologic response, even after all treatments were withdrawn.[10] The beneficial effect of vedolizumab in controlling HIV infection is currently being investigated in 2 Phase I clinical trials.[11,12] Nevertheless, the role of integrin in HIV infection is not fully understood as illustrated by the failure of natalizumab, an anti-α4 integrin, in blocking HIV-1 replication.[13]

Taking into account the gut selectivity of vedolizumab, the low rate of associated serious infections and its potential effect on HIV infection progression, it is an attractive treatment option for patients with coexisting IBD and HIV.[14]

DISCLOSURES

Author contributions: M. Aharoni Golan, Y. Wang, and DT Rubin wrote the manuscript. M. Aharoni Golan, R. Weisshof, Y. Wang, and DT Rubin reviewed and approved the final manuscript. M. Aharoni Golan is the article guarantor.

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