




Gastrointestinal Bleeding as a Clinical Manifestation of *Strongyloides stercoralis* Hyperinfection in a Patient with HIV: A Case Report

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Abstract

Strongyloidiasis, caused by the nematode *Strongyloides stercoralis*, is an often neglected parasitic disease, with deeper prevalence in tropical and subtropical regions. This parasitic infection can range from asymptomatic to symptomatic, with nonspecific manifestations, including gastrointestinal symptoms. Herein, we reported the case of an human immunodeficiency virus (HIV)-positive patient, under effective antiretroviral treatment with a normal CD4 count, who was hospitalized due to gastrointestinal bleeding. The diagnosis of strongyloidiasis hyperinfection was confirmed following endoscopic biopsies of both the gastric and duodenal mucosa. Subsequently, a treatment regimen of ivermectin at a dosage of 200 mcg/kg/day for a duration of 14 days was initiated, leading to notable amelioration in the patient's clinical presentation. In considering the differential diagnosis of gastrointestinal bleeding, it is crucial to explore various possibilities, including peptic ulcers, portal hypertension, and cancer. Among immunocompromised individuals like those with HIV, chronic infection can compromise the Th2 immune response, which is pivotal in combating helminthic infections. This underscores the importance of remembering intestinal parasitosis, particularly strongyloidiasis, in such cases. Even in patients with preserved CD4 counts, careful evaluation for opportunistic infections in HIV-positive individuals is paramount. Early initiation of treatment is essential to mitigate the risk of serious complications.

Keywords

- ▶ gastrointestinal bleeding
- ▶ HIV
- ▶ strongyloidiasis

Introduction

Strongyloidiasis is a neglected parasitic disease in which the clinical presentation is variable. Gastrointestinal (GI) bleeding as a manifestation of *Strongyloides stercoralis* hyperinfection in a human immunodeficiency virus (HIV) patient is rarely described in the medical literature.

Case Report

A 59-year-old man, HIV-positive and under consistent treatment with atazanavir/ritonavir, zidovudine, and lamivudine, presented with dark stools occurring two to three times daily, alongside abdominal discomfort and postprandial vomiting devoid of blood traces. Upon admission, he

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exhibited pallor. Cardiac and respiratory assessments showed no abnormalities. Abdominal palpation disclosed tenderness without masses or signs of peritoneal irritation. However, the patient subsequently developed refractory hypotension despite volume expansion with crystalloids, necessitating vasoactive drug support.

Laboratory tests revealed anemia with a hemoglobin level of 8.2 g/dL, leukocytosis with a white blood cell count of 11,080/ μ L (with neutrophils at 9,064/ μ L, lymphocytes at 1,109/ μ L, and eosinophils at 202/ μ L), and a platelet count of 516,000/ μ L. CD4 count greater than 350 cells/ mm^3 and undetectable viral load. Abdominal computed tomography (CT) revealed marked concentric parietal thickening of the cecum and ascending colon, with contrast enhancement (**Fig. 1A**). Within the first 24 hours after clinical stabilization, he underwent upper digestive endoscopy, which revealed a normal esophagus, atrophy of the gastric body mucosa (**Fig. 2A**), erosive gastritis with hematin in the antrum (**Fig. 2B**), and erosive bulboduodenitis (**Fig. 2C**). Stool examination for parasites and culture were requested. Due to the refractoriness of the symptoms, 7 days later, a second abdominal CT was performed, which revealed an increase in the extent of the concentric parietal thickening of the ascendant and cecum, associated with densification of the adjacent fatty planes and prominent regional lymph nodes measuring up to 1.1 cm (**Fig. 1B**). At this time of admission, histopathological examination of biopsies of the gastric and duodenal mucosa revealed infestation with *Strongyloides* larvae, confirming the diagnosis of strongyloides hyperinfection (**Fig. 2D**). Simultaneously, fecal parasitology showed the presence of *Strongyloides stercoralis*. It was decided to start treatment with ivermectin 200 mcg/kg/day for 14 days. He evolved with clinical improvement and was discharged with resolution of symptoms.

Discussion

Strongyloidiasis is a neglected parasitic disease, which can persist in the body chronically, caused by *Strongyloides stercoralis*. This parasite is a nematode with higher prevalence in

tropical and subtropical regions. The prevalence of this infection in Brazil, an endemic country, according to community studies, is between 11 and 20%.¹ Exacerbating the situation, there is a lack of development of specific public health programs to control this condition.²

Parasitic infection occurs mainly through penetration of the skin, reaching the lung alveoli through the bloodstream and subsequently entering the GI tract. The clinical presentation is variable. In acute phases, dermatological manifestations may occur, along with respiratory and GI symptoms, associated with larval migration to the small intestine. In the chronic phase, clinical presentation can range from asymptomatic forms to nonspecific GI symptoms, such as diarrhea and abdominal pain. In severe cases, there may be intestinal obstruction or perforation, with hyperinfection syndrome, especially in patients with compromised immunity.^{3,4}

The hyperinfection syndrome, which occurred in our patient, can be defined as a change in the immune status, in general, from the severe increase and migration of larvae, with a consequent increase in pulmonary and GI symptoms.³ The use of immunosuppressive medications, some viroses, like human T-lymphotropic virus 1 and HIV, and malnutrition have been associated with serious manifestations of this disorder.⁴ HIV infection is known to cause a wide range of immune dysfunctions, affecting not only the quantity but also the quality of the immune response. Studies reveal that throughout the course of HIV infection, autoimmunity is induced, leading to the hyperactivation of cellular immunity, which can generate nonspecific death of immune system cells.⁵

Changes in the innate and adaptive immune response in patients with HIV can lead to increased susceptibility to opportunistic infections, regardless of the CD4 count, as reported in our patient, who had, at the time of admission, a CD4 cell count within normal limits. Studies have shown a higher prevalence of intestinal parasitic infections in individuals with CD4 cell counts below 250 cells/ μ L, although other studies have reported a higher risk of helminth infection in HIV patients with higher CD4 cell counts.⁶ This phenomenon is particularly relevant in the context of

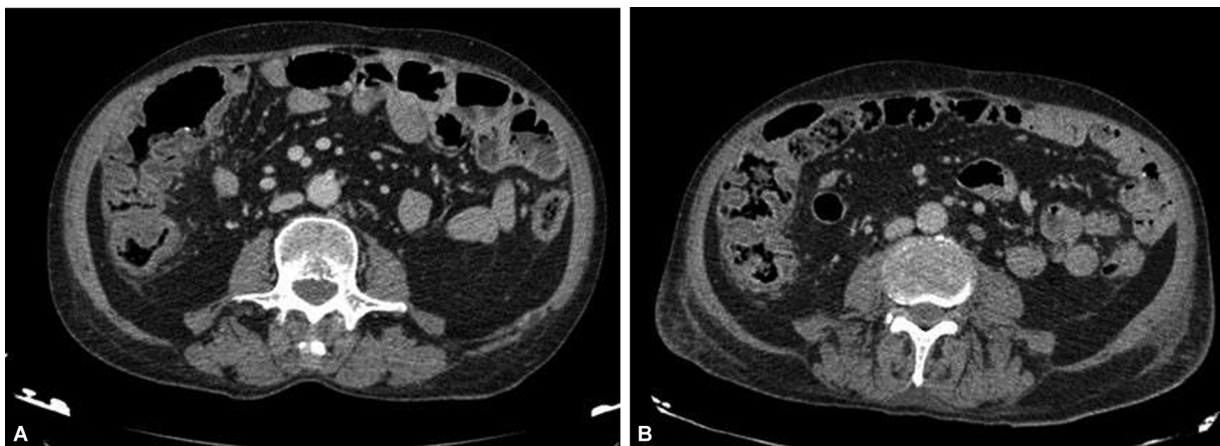


Fig. 1 (A) Computed tomography (CT) of the abdomen with intravenous contrast revealing marked concentric parietal thickening of the cecum and ascending colon. (B) Increased extent of concentric parietal thickening of the ascendant and cecum on subsequent abdominal CT scan with intravenous contrast.

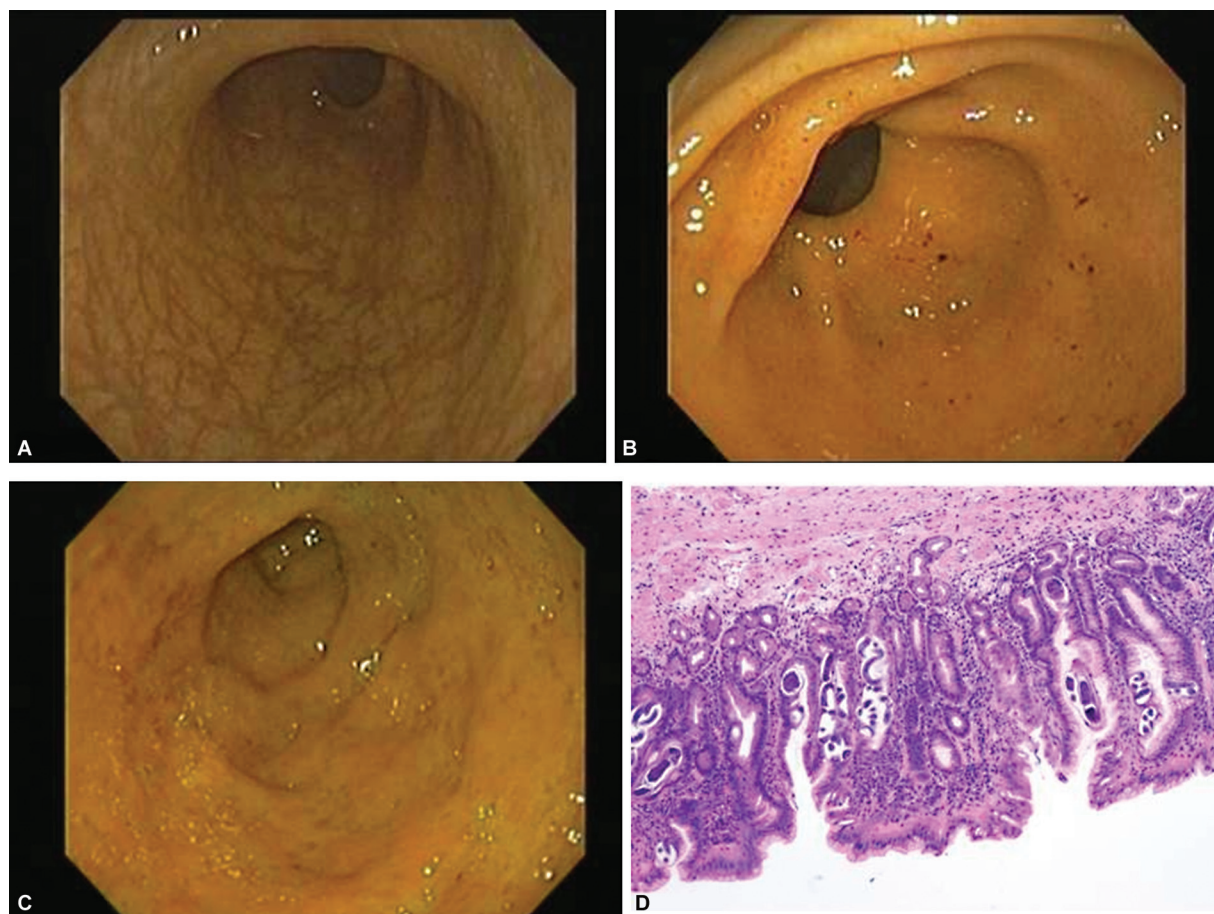


Fig. 2 (A) Upper digestive endoscopy revealed atrophy of the gastric body mucosa. (B) Erosive gastritis with hematin in the antrum. (C) In the second portion, the mucosa displays signs of swelling, enanthema, erosions, and attenuation of the duodenal folds. (D) Gastric biopsy showed many *Strongyloides stercoralis* adult worms and larvae.

parasite infections, such as *Strongyloides stercoralis*, due to its chronic nature.

The Th2 immune response, which is fundamental against helminthic infections, can be compromised by chronic HIV infection. Infection and depletion of Th1 and Th2 cell subsets by HIV can lead to massive decline of their responses depending on the course of the infection.⁵ This includes a possible elevated risk for developing *Strongyloides* hyperinfection syndrome, a serious condition that requires immediate medical attention. A case report, published in 2020, sheds light on the diagnostic complexities of strongyloidiasis hyperinfection in an HIV-positive kidney transplant recipient with a stable CD4 count, mirroring our patient's situation.⁷ This underscores the imperative for heightened clinical vigilance and reevaluation of the initial screening approach for strongyloidiasis in immunocompromised individuals, extending to those with normal CD4 counts.

GI bleeding, as seen in our patient, represents a clinical challenge. This problem is associated with high costs and can have substantial adverse impacts on patient health.⁸ Therefore, early recognition of this symptom is essential to ensure more effective management and treatment. When confronting GI bleeding, a broad consideration of potential causes is essential. Peptic ulcers, often induced by *Helicobacter pylori* infection or nonsteroidal anti-inflammatory drug use, require prompt

attention to prevent severe hemorrhage. Portal hypertension, commonly from cirrhosis, can lead to variceal bleeding, necessitating urgent intervention. Malignancies such as gastric or colorectal cancer may manifest with bleeding, highlighting the importance of thorough evaluation.⁹ Inflammatory causes, such as inflammatory bowel disease, also deserve attention, considering the misdiagnosis that can occur in cases of colitis.¹⁰ Each etiology underscores the need for tailored management strategies to optimize patient outcomes.

As it is a possible emergency condition, it is extremely important to conduct early diagnosis and treatment. For the treatment of strongyloidiasis, including in asymptomatic cases, ivermectin is the first-line medication. Studies have demonstrated the superior efficacy of ivermectin with a lower incidence of side effects.¹¹ In HIV patients standard doses are typically effective at 200 mg/kg/day, for 2 days. However, especially in immunocompromised individuals, a longer treatment duration may be necessary. In our case, given the hyperinfection, a dosage of 200 mg/kg/day was administered until negative stool tests were achieved over a period of 2 weeks, although treatment duration can be personalized.³ Furthermore, it is imperative to develop government policies to control the spread of this disease and implement screenings for asymptomatic patients, since strongyloidiasis remains a significant public health problem.

In conclusion, it is essential to consider intestinal parasites, particularly *Strongyloides stercoralis* hyperinfection, in the differential diagnosis of GI bleeding in immunosuppressed patients. In this context, early diagnosis and timely treatment are essential to prevent serious adverse outcomes.

Ethical Statement

The patient signed an informed consent form, authorizing the publication of this case.

Authors' Contributions

Conception and design of the study: B.C.S., P.F.M.B. Generation, collection, assembly, analysis, and/or interpretation of data: B.C.S., C.A.C.M., L.A.R.F., R.D.A.B. Drafting or revision of the manuscript: B.C.S., P.F.M.B., C.A.C.M. Approval of the final version of the manuscript: All the authors approved the final manuscript. Guarantor of article: B.C.S.

Informed Consent

The case report was consented by the patient.

Data Availability Statement

There is no data associated with this work.

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None.

Conflict of Interest

None declared.

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