An Unusual Presentation of Duodenal *Strongyloides stercoralis* Enteritis Ulcerative Colitis Patient: A Case Report

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Abstract

Introduction: Strongyloidiasis is a parasitic disease, which is more prevalent in tropical regions of the world. It is usually found in a chronic and limited disease form yet in some immunocompromised patients, it may become a life-threatening disease.

Case Presentation: A 55-year-old female, who was a known case for ulcerative colitis, referred to the hospital with nausea and vomiting. The patient was diagnosed with Strongyloidiasis due to *Strongyloides stercoralis* larvae, detected in the stool examination test and the biopsy specimens taken from the duodenum. The patient received subcutaneous ivermectin and reached a complete recovery.

Conclusions: *Strongyloides stercoralis* often causes chronic and clinically asymptomatic infection; parasite number can increase substantially in the immunocompromised host, leading to hyperinfection, dissemination, and death if unrecognized. It is noteworthy to mention that screening for Strongyloides infection before the initiation of immunosuppressive therapy should be considered, particularly in endemic areas.

Keywords: Helminthic Infection, Parasitic Infection, *Strongyloides Stercoralis*, Strongyloidiasis

1. Introduction

Strongyloidosis is a parasitic disease, which is more prevalent in tropical and subtropical regions and is caused by *Strongyloides stercoralis* (*S. stercoralis*), a nematode helminth. It has been estimated that Strongyloidosis affects about 100 million people worldwide yet the true prevalence of the disease is difficult to measure due to the subclinical nature of the disease (1-3).

Strongyloidiasis usually presents as a chronic and limited disease, which may become a life-threatening disease in patients with immunocompromised conditions (4). Although *S. stercoralis* often causes a clinically asymptomatic infection yet parasite number can proliferate substantially in the immunocompromised host, leading to severe outcomes, such as hyperinfection, dissemination, and death if it remains unrecognized (5).

Here, this study reports on a case of duodenitis related to strongyloides in a female with ulcerative colitis, presenting with nausea and vomiting. The following case emphasizes consideration of unusual etiologies in patients with GI symptoms with a history of treatment with immunocompromised agents.

2. Case Presentation

A 55-year-old female, who was a known case of ulcerative colitis, was admitted to the emergency department with complaints of nausea and vomiting. The symptoms had begun since two weeks ago. Primarily, it was initiated by postprandial vomiting, which would not resolve even in fasting and aggregating malaise. The patient was not complaining of abdominal pain, chest pain, and headache. She never had jaundice, hematemesis, melena, hematochezia, or tenesmus. She had a history of ulcerative colitis for about ten years and was treated with mesalamine. For years, she was treated with prednisone. In the last colonoscopy that was done about one month ago, mucosal erythema and decreased vascularity in the rectum and entire colon with pseudo-polyp was reported.

On initial general physical examination, the patient was found to have mild pallor and had moderate abdominal discomfort. No oral or pharyngeal thrush was noticed yet the mouth mucosal seemed to be dry. Vital signs were stable. Fever was not detected. Heart and lung auscultations were normal. Her abdomen had no tenderness, guarding, and rigidity. No free fluid or organomegaly was

appreciated. No peritoneal signs could be elicited. Her digital rectal exam was unremarkable.

After admission, IV fluid therapy was started immediately. Initial lab data showed White Blood Count (WBC) = 7300 with 2% eosinophil and HB = 9. Patient's potassium was low, yet other electrolytes were normal. Liver function test and amylase and lipase were normal. Electrocardiogram (ECG) showed normal sinus rhythm and cardiac troponin was negative. In imaging, the X-ray of the chest and abdominal X-ray showed normal findings. For more evaluation, upper GI endoscopy was performed and severe erythema was reported in the duodenum. Biopsy was taken and the pathology report suggested strongyloidiasis (Figure 1). As represented in Figure 2, stool tests were also done for the patient and the strongyloidiasis larvae were seen. Treatment with subcutaneous ivermectin was started and on third day of treatment, the stool test became negative. After treatment, the patient's symptoms were resolved, and she was discharged in a good condition.

Figure 1. Stool Examination Representation of *S. stercoralis* Larvae

3. Discussion

Duodenitis due to *Strongyloides stercoralis* infection is a rare entity in immunocompetent patients with few cases reported, with the current case categorized in this group. Generally, healthy individuals are asymptomatic when chronically infected yet patients with a compromised immune system are predisposed to disseminated disease that involves multiple systems with subsequent possible septic shock (6). Immunosuppression is the greatest threat for severe symptomatic Strongyloidiasis, which can occur as a result of hyperinfection. Previous literature have

Figure 2. Histopathological Examination of the Duodenal Mucosa Showing Single *S. stercoralis* (Hematoxylin - Eosin Staining)

documented risk factors for hyperinfection, including immunosuppressive therapy, especially steroids or cytotoxic agents, and tumor factor inhibitors, co-infection with Human T-Lymphotropic Virus - 1 (HTLV - 1), presence of hematologic malignancies, hypogammaglobulinemia, chronic alcohol consumption, uremia, severe malnutrition, and diabetes mellitus (4, 7).

Glucocorticoids are the most widely used immunosuppressive drugs and directly affect the female larvae to increase output of infective larvae, transforming chronic strongyloidiasis to hyper infection (5, 8). The current case had a history of long-term use of prednisone and mesalamine, which dramatically affect the course of infection.

The Gastrointestinal (GI) manifestations of the disease vary, including nausea, vomiting, abdominal pain, anorexia, watery diarrhea, constipation, weight loss, bowel obstruction or gastrointestinal bleeding. These symptoms begin about two weeks after infection yet the detection of larvae in the stool may be possible after three to four weeks. Chronic infestation is usually limited to the duodenum and jejunum. Massive overwhelming strongyloidiasis may cause intestinal obstruction, ileus, GI bleeding, and megaduodenum. Adult worms can invade the intestinal mucosa and produce an inflammatory response, involving mono-nuclear cells and eosinophils (9, 10).

Although stool examination demonstrated the diagnosis of the current case, yet according to the literature, it is necessary to examine serial stool samples to detect *S. stercoralis* larvae and it should be underlined that not identifying larvae in the stool does not imply an absence of infection. Bronchoalveolar lavage fluid and bronchial washings and brushings are other ways for the identification of the larvae. Upper and lower endoscopy can also establish the diagnosis of strongyloidiasis, as larvae may be seen on biopsies of the affected mucosa (11, 12).

Endoscopic and histopathologic presentations of strongyloidiasis vary. However, no evident pathognomonic finding has been considered for strongyloidiasis. Previous reports revealed a broad range of endoscopic findings for this disease, including erythematous and edematous mucosa, severe duodenitis, polyp, hemorrhage, megaduodenum, deformity, and stenosis, swollen folding of nodular aspect, and villi atrophy (8, 13). In contrast to endoscopic findings, there have been fewer reports regarding the histopathological evaluation yielded by endoscopy for strongyloidiasis. In an endoscopic - pathologic case - series by Thompson et al., a minimum of six biopsies were obtained from each lesion, resulting in a 100% histopathologic yield from the 6 patients and it was concluded that biopsy specimens from the duodenum were the most accurate method of diagnosis (14). The current endoscopic and histopathologic findings from the duodenal biopsy were consistent with their results.

In immunocompetent cases, strongyloidiasis can be difficult to diagnose because excretion of larvae in faces is highly variable and often of low intensity. At least three consecutive stool specimens should be examined microscopically for characteristic larvae (not eggs), and stool concentration techniques may be required to establishment of the diagnosis. Polymerase Chain Reaction (PCR) assays for intestinal parasites are another method with enhanced sensitivity and specificity, which have been used increasingly on fecal DNA samples for the detection of microorganism (15).

For the management of the disease, Ivermectin is the drug of choice at a dose of 200 mcg/kg daily for one to two days for uncomplicated cases and five to seven days for disseminated disease. Medical treatment should be achieved even in the absence of symptoms, in order to avoid the dissemination of the parasite and minimize the risk of development of hyperinfection syndrome. In cases of disseminated disease, it may be necessary to prolong or repeat therapy. Albendazole and thiabendazole, are equivalent to ivermectin in efficacy. After treatment, the patient should be monitored through serial stool examinations, eosinophil count, and clinical assessment (16, 17).

Although *S. stercoralis* often causes chronic and clinically asymptomatic infection, parasite number can increase substantially in the immunocompromised host, leading to hyperinfection, dissemination, and death if unrecognized. It is noteworthy to mention that screening for Strongyloides infection before the initiation of immunosuppressive therapy should be considered, particularly in endemic areas.

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Footnote

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