An Obscure Case of Upper Gastrointestinal Bleeding

by Gabrielle Prince, Eugene Wong, Jonathan Rieber

INTRODUCTION
We report the case of a 67-year-old male who developed recurrent upper gastrointestinal bleeding secondary to Strongyloides stercoralis. Strongyloidiasis can involve any segment of the gastrointestinal tract. Diagnosis is best made by clinical suspicion and confirmed by evaluating aspirate from the duodenum. Patients with obscure gastrointestinal bleeding and who have been in areas endemic for Strongyloides should be tested for presence of the disease. Clinicians need to become familiar with the common and unusual presentations of this parasitic disease.

Strongyloidiasis is an endemic parasitosis of tropical and subtropical regions. Patients typically have mild non-specific gastrointestinal or pulmonary symptoms such as progressive weight loss, diarrhea, abdominal pain, vomiting, and dry cough which may be confused with other disease processes. A minority of patients may develop the disseminated form of Strongyloidiasis resulting in potentially high mortality from gastrointestinal bleeding, enteric gram negative sepsis, meningitis or intra-alveolar hemorrhage. Diagnosis is made by clinical suspicion and by detecting rhabditiform larvae in tissue of stool. We present a case of a patient with recurrent gastrointestinal bleeding caused by Strongyloides stercoralis and discuss why the diagnosis is often missed.

THE CASE
A 67-year-old male was sent from the nursing home to the hospital after laboratory tests revealed a hemoglobin of 4.4 g/dl. Two days prior to admission, the patient noted generalized weakness and dizziness which was worse with walking and standing. He denied melena, hematochezia, abdominal pain, fever, chills, nausea, or vomiting. The patient did note intermittent dark, tarry stools for about one to two months.

The patient’s past medical history was notable for diabetes mellitus with chronic renal insufficiency, hyperlipidemia, hypertension, gout, an exploratory laparatomy with small bowel obstruction and an admission in several years prior for anemia thought to be from gastrointestinal bleeding where erosive gastritis and a gastric ulcer was noted on endoscopy. Pathology was negative for H. pylori. The patient was also admitted in the same year for melena and anemia where an upper endoscopy showed multiple esophageal plaques consistent with candida esophagitis, a hiatal hernia and a clean-based gastric ulcer. A repeat upper endoscopy months later showed persistent plaques in the esophagus again consistent with candida esophagitis. A previously performed colonoscopy showed internal hemorrhoids and colitis. Prior to being placed in the nursing home, he commuted regularly between his native country, the Dominican Republic, and New York City.

At admission, the patient was afebrile, his blood pressure was 108/73 mmHg and his pulse was 110 per minute and regular. The physical examination was remarkable for dry mucus membranes and a nondistended abdomen without rebound or guarding. Rectal examination showed a trace amount of blood with brown stool.

(continued on page 62)
Gastrointestinal Bleeding

A CASE REPORT

(continued from page 60)

The patient was transfused a total of four units of packed red blood cells. An upper endoscopy revealed plaques in the esophagus consistent with candida. Biopsy of the duodenum showed small intestinal mucosa with chronic inflammation and organism consistent with *Strongyloides*. (See Figure 1) No *Helicobacter pylori* was identified. A colonoscopy showed a focal ulcer in the ascending colon. Biopsy showed colonic mucosa with regenerative epithelium with moderate eosinophilia, and chronic inflammation. Numerous *Strongyloides* organisms were seen in the cysts and lamina propria (See Figures 2,3).

Bronchial aspirate did not show any evidence of ova or parasites. Stool examination was negative for ova and parasites. Antibody for *Strongyloides* EIA IgG was 18.39 (>1.7 is considered positive). The patient was administered ivermectin 200 mcg/kg intravenous for 2 days.

DISCUSSION

Strongyloidiasis is a parasitic infection, resulting from contact with the nematode, *Strongyloides stercoralis*. Humans become infected when filiaform larvae, living in the soil, burrow into the skin. Once within the circulation, the larvae access the lungs where they penetrate alveoli, ascend the trachea and enter the gastrointestinal tract via swallowed sputum. In the small intestine, the larvae thread themselves into the intestinal mucosa where they develop into adults and deposit their eggs.[See Table 1] The eggs hatch into rhabditiform larvae and burrow into the intestinal lumen. (1) If intestinal transit is quick enough, they are excreted with stool. Otherwise, they mature into filiaform larvae and re-enter the host’s circulation via the intestinal wall. This is known as autoinfection and it allows for recurrent, chronic strongyloidiasis that can persist for decades. (1,2) Individuals with poor cell-mediated immune function often develop hyperinfection and/or dissemination. (3) Hyperinfection describes an acceleration of the lifecycle, as the rhabditiform larvae mature into filiaform larvae rapidly within the host, resulting in an overwhelming worm burden within the circulation, gastrointestinal tract, lungs and upper respiratory tract. (4) Disseminated strongyloidiasis describes the additional hematogenous spread of Strongyloides to organs outside the parasitic lifecycle (5).

![Figure 1](image1.png)

**Figure 1.** Small intestinal villi are seen with some chronic inflammation in the lamina propria. Organisms are seen in the lumen outside the duodenal tissue.

![Figure 2](image2.png)

**Figure 2.** Ascending colon biopsy Zoomed-It shows acute inflammation and organisms (the black coarse round to oval structures) in the crypt.

![Figure 3](image3.png)

**Figure 3.** Ascending colon biopsy showing crypts with regenerative epithelium. Mild inflammation is noted in the lamina propria. The S. organisms are visible in the crypt in the center.
Strongyloides thrives in areas where the soil is warm and moist, especially tropical and subtropical regions, but also in more temperate climates such as the Appalachian region and southeastern region of the United States. As a result, it is predominantly found in rural areas, where exposure to soil is more common, and institutional settings, where the larvae can easily spread via skin contact. It is also more common in patients of lower socioeconomic status. Cases in the United States are usually found amongst immigrants, refugees and patients who have traveled to endemic regions during their lives, such as veterans of World War II and the Vietnam war. Patients taking corticosteroids, immunosuppressive agents, chemotherapy or those with HTLV-1, HIV/AIDS, hematologic malignancy, diabetes mellitus, advanced age and end-stage renal disease often develop hyperinfection and dissemination.

About one-third of immunocompetent patients with strongyloidiasis are asymptomatic. However, acute infection can result in cough, wheezing, shortness of breath, a localized pruritic rash or a rapidly advancing maculopapular or urticarial serpiginous rash (larva currens) related to transient intradermal migration of the filiform larvae. Chronic infection can present with low-grade fever, nausea, vomiting, epigastric pain, and intermittent diarrhea with constipation. As the infection progresses, the intestinal mucosal destruction can lead to malabsorption, colitis, colonic pseudopolyps, and electrolyte imbalances. In immunocompromised patients, the larvae overwhelmingly invade the colonic mucosa, circulation and lung parenchyma. This can cause massive ulceration and bleeding of the gastrointestinal tract, polymicrobial bacteraemia and sepsis, diffuse alveolar hemorrhage and berry aneurysms of invaded arteries. Dissemination, characterized by severe gastrointestinal and respiratory tract involvement, meningitis, skin rash or Gram-negative bacteremia, results in fulminant multi-organ failure and death, even despite treatment.

Laboratory findings and imaging studies are often subtle in individuals with strongyloidiasis. Peripheral blood of those infected may reveal mild leukocytosis, eosinophilia, anemia or electrolyte abnormalities, but often is without any abnormalities. Imaging may reveal non-specific findings such as small and large bowel wall thickening, luminal narrowing and loss of haustra. Endoscopic findings include edema, mucosal thickening, erythema, mucosal bleeding and ulcerations, all found in both duodenum and colon.

Definitive diagnosis of strongyloidiasis is made on the basis of detection of larvae in the stool, sputum or duodenal fluid or biopsy. Stool exams fail to reveal the larvae and eggs in 70% of cases, thus requiring endoscopy for duodenal aspirate and biopsy. A standardized ELISA for serum Strongyloides antibodies can be used with >90% sensitivity and variable specificity, depending on the assay used. A positive result is non-specific for current or previous infection because the assay does not distinguish between IgG and IgM antibodies.

Strongyloides itself is a diagnosis that is frequently missed. The current reasoning for this is the overall lower incidence of parasitic infections in the US and the subacute, non-specific signs and symptoms that patients often present with. Newer guidelines suggest screening unexplained peripheral eosinophilia via antibody testing, followed by fecal testing or empiric treatment in patients who test positive. This concept has been broadened to include the screening of institutionalized patients with suspected strongyloidiasis or those planning to start immunosuppressive therapy. False positives can occur in patients infected with other intestinal nematodes or filariasis.

In the U.S., strongyloidiasis is usually missing from the differential diagnosis for gastrointestinal bleeding. Intermittent GI bleeding is expected given that the parasites lifecycle requires mucosal shedding and breakdown, anywhere along the gastrointestinal tract. The subsequent presentation may include slow, downward hemoglobin drifts in the immunocompetent patients with strongyloidiasis.
Gastrointestinal Bleeding

A CASE REPORT

Patient versus brisker upper and lower GI bleeds evidenced by melena or bright red blood per rectum in patients with hyperinfection or dissemination. Unfortunately, as in the presented case, duodenal aspirate is often not sent for microscopic evaluation for larvae and the diagnosis is missed if the non-specific findings on endoscopy do not prompt biopsy. (7) With the increasing number of immunosuppressed patients worldwide and increased mobility and tourism, more clinicians need to become familiar with this disease, especially the manifestation of subacute to acute gastrointestinal bleeding. Patients with obscure gastrointestinal bleeding, who have traveled or lived in an endemic area, should be considered for Strongyloides infection by obtaining serologies if time allows, or proceeding to endoscopy with duodenal aspirate.

References