

Capsule Endoscopy Demonstrating Blood Sucking Hookworms as A Cause of Obscure Gastrointestinal Bleeding

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Abstract

Hookworm infestation will usually present with iron deficiency anemia. In this report we present a case of obscure overt gastrointestinal bleeding occurring from last two years in a young individual, requiring 50 units of blood transfusion. He was diagnosed with hookworm infection on a capsule endoscopy, which demonstrated dancing worms buried in the mucosa of small bowel and were actively sucking blood. He was treated with a short course of mebendazole and recovered completely. Capsule endoscopy can be useful in diagnosing hookworm infection if other modalities fail.

Keywords: Hookworm; Capsule Endoscopy; Obscure Gastrointestinal bleeding

Case

A young boy of age 14 years was referred at our center with two years history of intermittent hematochezia. There was no associated pain in the abdomen, fever, and diarrhea. He was investigated earlier and was diagnosed with iron deficiency anemia. He was managed with repeated blood transfusions and received 50 units of blood transfusions in last two years. He underwent repeated esophagogastroduodenoscopy (EGD), colonoscopy and radiographic contrast studies of intestines earlier, which were reported to be normal.

At our center, the results of hematological examination showed hemoglobin 5.86 g/dL, red blood cell count $2.43 \times 10^{12}/L$, white blood cell count $4.5 \times 10^9 /L$ (including 5% eosinophil granulocyte). We also performed an esophagogastroduodenoscopy (EGD) and colonoscopy, which were normal. In view of obscure gastrointestinal bleeding, capsule endoscopy was performed which demonstrated multiple hookworms in the proximal and mid jejunum. Hookworms were seen buried partially in the wall of jejunum and were seen actively sucking the blood with dancing movements (Video 1). Sucked blood could be appreciated in the cavity (pseudocoelom) of hookworms, giving red colored to hookworms. White colored hookworms were lying quiescent in the small bowel. Blood could also be seen in the cavity of small bowel, thus causing hematochezia to the patient (Figures 1 and 2). Anthelmintic (Mebendazole 100 mg, twice daily for three days) and iron supplements (for 3 months) were prescribed to the patient. On follow up, he improved clinically within 4 weeks, and his hemoglobin increased spontaneously to 11 gm/dl after 3 months.

Obscure gastrointestinal bleeding (OGIB) is defined as occult or overt bleeding of unknown origin that persists or recurs after an initial negative endoscopic evaluation including colonoscopy and EGD. The introduction of capsule endoscopy over the past decade has had a major impact in the diagnosis of OGIB. Parasites are an uncommon cause of obscure gastrointestinal bleeding but not in tropical countries like India.



Figure 1: Capsule endoscopy image showing hookworm buried in the mucosa of jejunum and actively sucking blood.

Ancylostoma duodenale and *Necator americanus* are the hookworm species affecting the human beings. An Italian physician, Dubini, first described hookworm in 1838, after an autopsy. Iron deficiency anemia, one of the common health diseases can occur due to mechanical sucking of blood and due to blood loss secondary to release of anticoagulants by the worm. But if the hookworm infestation is high the bleed can be severe and patient can present with obscure overt gastrointestinal bleeding (hematochezia), as in our case.

Conventionally hookworm diagnosis is usually made by evaluation of stool for the eggs. Recently, newer small bowel imaging modalities like capsule endoscopy and double balloon enteroscopy has identified hookworm as a cause of obscure gastrointestinal bleeding [1,2]. Multiple worms can be identified feeding on the mucosa of the small

intestine and they appear red in color or they can be identified in the luminal cavity and appear white in color. Presentation can be with gastrointestinal bleed, iron deficiency anemia or pain abdomen [3]. Usually hookworms are identified in distal small bowel but can rarely also be diagnosed on an EGD [4].

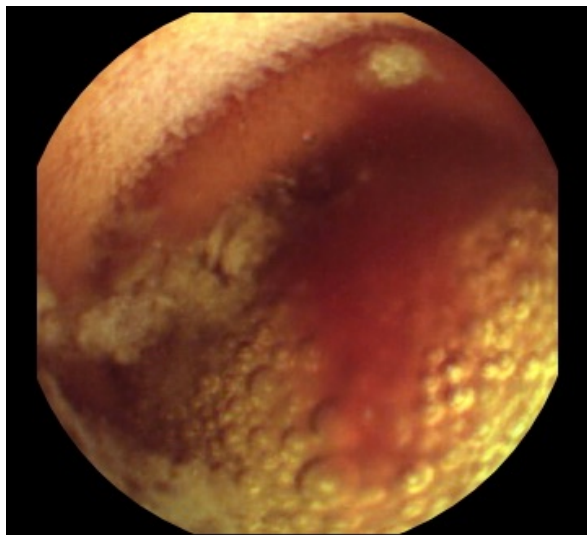


Figure 2: Capsule endoscopy image showing blood in the lumen of small bowel due to excessive sucking caused by the hookworm. This massive blood loss presented as hematochezia in our patient.

Conventionally hookworm infestation is found commonly in Asian population [5]. But, due to massive migrations of populations, physicians all over the world should think about hookworm as a cause of obscure gastrointestinal bleeding in young individual. It is important to prevent the infection by avoiding barefoot walking and maintenance of food hygiene [6,7]. Treatment with antihelminthic, albendazole (400 mg as a single dose) or mebendazole (100 mg twice daily for 3 days) is highly effective and simple. Clinician should not miss this treatable cause of anemia, and even if the stool samples are normal one can use advance endoscopic modalities to identify undiagnosed cases without any other apparent proven cause of anemia.

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