Ascariasis Presenting as Hematoma in the Sigmoid Mesocolon: A Case Report

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Ascariasis is an intestinal disease caused by Ascaris lumbricoides. Most patients with ascariasis are asymptomatic; however, the presence of many larvae in the bowel can cause gastrointestinal complications, such as intestinal obstruction, obstructive jaundice, cholangitis, cholecystitis, and pancreatitis. Herein, we report a case of ascariasis presenting as hematoma and active bleeding in the sigmoid mesocolon of a 74-year-old man on computed tomography (CT). Sigmoid colon perforation was also detected on follow-up CT. Laparoscopic low anterior resection was performed; there was a large hematoma in the sigmoid mesocolon. Roundworms were microscopically identified in the mesenteric adipose tissue. The clinical and CT findings of this unusual presentation of ascariasis revealed serial complications during parasite migration from the intestinal lumen to the peritoneal cavity.

Index terms Ascariasis; Hematoma; Sigmoid Mesocolon; Bowel Perforation

INTRODUCTION

Ascaris lumbricoides (A. lumbricoides) is a soil transmitted nematode and one of the most common parasites in the world. Infection is acquired via fecal-oral transmission through ingestion of food, water, or soil contaminated with embryonated eggs and can manifest intestinal illness known as ascariasis. When ingested, the eggs hatch in the stomach and duodenum and release the larvae, which then penetrate the intestinal wall and enter the portal circulation (1). Among the various complications of ascariasis, computed tomography (CT) findings of hematoma with active bleeding in the sigmoid mesocolon are rarely reported. In this report, we describe a case of ascariasis manifesting with serial complication including colonic perforation and hematoma in the sigmoid mesocolon.
CASE REPORT

A 74-year-old man visited our hospital with a complaint of abdominal pain that had appeared one day before. He had no past history of medication, previous abdominal surgery or trauma, or overseas travel; however, he often had freshwater fish soup. On physical examination, he complained of tenderness and mild rebound tenderness in the lower abdomen. The laboratory examination revealed a hemoglobin level of 11.3 g/dL. White blood cell and eosinophil counts were within the normal limits. An initial contrast-enhanced CT scan of the abdomen and pelvis revealed an approximately 11.1 cm × 7.5 cm × 7.4 cm sized non-enhancing high-attenuated mass-like lesion in the sigmoid mesocolon with extravasation of contrast media within the lesion and perilesional fat infiltration (Fig. 1A). The possibility of hematoma in the sigmoid mesocolon was suggested, and exophytic subepithelial tumor of the sigmoid colon with hemorrhage was considered as a differential diagnosis. Sigmoidoscopy was...

Fig. 1. Ascariasis presenting as hematoma in the sigmoid mesocolon in a 74-year-old man with a complaint of abdominal pain.
A. Initial contrast-enhanced CT images reveal a non-enhancing high-attenuation mass-like lesion, measuring approximately 11.1 cm × 7.5 cm × 7.4 cm, at the mesenteric border of the sigmoid colon (64 HU in all phases) with an extraluminal extravasation of contrast media (arrowheads) in the mass-like lesion and perilesional fat infiltration (arrows; mucosal layer of the sigmoid colon).
B. Sigmoidoscopy shows diffuse edematous wall thickening of the sigmoid colon. Linear ulceration (arrow) is noted 25–28 cm from the anal verge. Further, a smooth well-defined mass-like intraluminal protrusion (arrowhead), measuring approximately 3 cm, is noted 15 cm from the anal verge, suggesting an extrinsic mass, with redness of the mucosa overlying it.
CT = computed tomography, HU = Hounsfield units
Fig. 1. Ascariasis presenting as hematoma in the sigmoid mesocolon in a 74-year-old man with a complaint of abdominal pain.

C. Follow-up contrast-enhanced CT images after 10 days reveal pneumoperitoneum (arrows) and hemoperitoneum (63 HU, asterisk). Perforation on the mesenteric side of the sigmoid colon (arrowhead) abutting the mass with extraluminal air is noted. Extraluminal air is noted both inside and outside the mass (open arrows).

D. Gross findings and microscopic sections of the segmentally resected large intestine. Grossly, the segmentally resected large intestine (upper panel, not fixed) shows a diffusely edematous mucosa, with a geographic ulcer (arrowhead) and luminal perforation (arrow). The mesenteric side of the fixed bowel (lower panel) reveals dark brownish discoloration, with a hematoma (circle).

E. The sections show a deeply penetrating ulcer (arrow), with submucosal and mesenteric (circle) hematomas (H&E stain, × 10). The purple box reveals a hematoma (zone 1) surrounded by inflamed granulation tissues (zone 2), neighboring the PM layer (zone 3) (H&E stain, × 40).

CT = computed tomography, F = mesenteric fat, H&E = hematoxylin and eosin, HU = Hounsfield units, M = mucosa, PM = proper muscle, SM = submucosa
performed to find the bleeding focus and to discriminate the possibility of a tumor and revealed diffuse edematous wall thickening of the sigmoid colon. Linear ulceration was noted at a distance of 25–28 cm from the anal verge; additionally, a smooth well-defined mass-like intraluminal protrusion approximately 3 cm in size with redness of the overlying mucosa was noted at a distance of 15 cm from anal verge, suggesting an extrinsic mass (Fig. 1B). The linear ulceration was biopsied, and the results showed chronic colitis with focal erosion and regenerative hyperplasia. The patient was undergoing conservative care. From the next day, the patient had intermittent hematochezia for 2 days. Ten days after the day of admission, the patient complained of severe acute abdominal pain. Immediate follow-up CT was performed to exclude the surgical abdomen. It revealed pneumoperitoneum with perforation of the mesenteric side of sigmoid colonic wall abutting the presumed hematoma (Fig. 1C). Emergent laparoscopic evaluation was performed and revealed a deep penetrating perforation site in the sigmoid colon attached to a huge hematoma with an old blood clot in the mesenteric fat. Laparoscopic low anterior resection was done. The gross finding of segmentally resected large intestine revealed diffusely edematous mucosa with geographic ulcer and luminal perforation. The mesenteric side of the fixed bowel showed dark brown discoloration along with the hematoma (Fig. 1D). Microscopic sections revealed a deeply penetrating ulcer with submucosal and mesenteric hematomas (Fig. 1E). The cut surface of the intestinal lumen disclosed a huge mesenteric hematoma. A whitish material was identified in the mesocolonic hematoma. On microscopy, a round worm was identified in mesenteric fat tissue. The round worm had thick cuticle and internal organs and was most likely A. lumbricoides.
**DISCUSSION**

*A. lumbricoides* causes the intestinal disease known as ascariasis. *A. lumbricoides* infestation is common in tropical and subtropical areas, especially in areas with poor sanitation. Infection occurs when embryonated eggs are ingested from contaminated food or water. Most people infected with *A. lumbricoides* have no symptoms due to plasticity of the intestine that allows accumulation of many worms. However, depending on the worm burden, infection can manifest various symptoms, ranging from minimal gastrointestinal complaints to severe abdominal pathology (1). There are several known abdominal complications of ascariasis, such as intestinal obstruction, biliary disease, pancreatitis, appendicitis, and primary peritonitis (2). On the other hand, ascariasis manifesting as bowel perforation and gastrointestinal bleeding is uncommon. There are few reported cases of ascariasis that manifest gastrointestinal intraluminal bleeding; this is mostly seen in pediatric patients (3-6), and worms are uncommonly found in the mesentery or mesocolon. Jeong et al. (7) reported a case of omental involvement of *Paragonimus westermani* with conglomerated calcifications in pelvic cavity. Kim et al. (8) reported a case of anisakiasis involving a lymph node in mesocolon. Kim et al. (9) reported that *Fasciola hepatica* was found in abscesses formed in the mesocolon. However, to our knowledge, there is no reported case of hematoma in sigmoid mesocolon as ascariasis.

*A. lumbricoides* has no sucker, only soft lips, so the pathogenesis of bleeding with mesenteric hematoma and perforation is thought to result from mechanical trauma due to its attachment to the intestinal lining, mucosal chemical irritation by its secretions, and massive migration of the parasite through the intestinal wall (1, 10). The present case showed mesenteric hematoma and colonic perforation, which are sequential complications as the larvae migrated.

Clinically common causes of mesocolic or mesenteric hematoma are spontaneous bleeding or trauma, but if serial complications such as gastrointestinal bleeding and perforation are noted, parasite infection should be considered as the differential diagnosis with the help of the relevant clinical information, including the patient's travel and food intake histories.

Diagnosis of ascariasis is generally based on the presence of adult worms or eggs in the stool samples; however, in case of complications an imaging modality such as CT is necessary. Ascariasis can be successfully treated with anthelmintic therapy, as long as there are no potentially fatal complications, such as bowel perforation.

Knowledge of ascariasis manifesting mesocolic hematoma and its CT imaging features will help radiologists and clinicians to make prompt diagnosis and appropriate therapeutic and management, and to avoid further surgical complication.

**Author Contributions**

Conceptualization, B.K.E.; data curation, B.K.E., K.H., B.B.; investigation, all authors; methodology, K.J., B.K.E.; project administration, B.K.E., K.H.; resources, all authors; supervision, B.K.E.; visualization, B.K.E., K.H., B.B.; writing—original draft, K.J.; and writing—review & editing, B.K.E.
Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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