Partial Small Bowel Obstruction in a Traveler

(See page 214 for the Photo Quiz)

Figure 1. Contrast-enhanced abdominal CT scan showing a long tubular filling defect (arrow) in the jejunum

Figure 2. Contrast-enhanced abdominal and pelvic CT scan showing a long tubular filling defect (arrow) in the jejunum
Diagnosis: Partial small bowel obstruction due to intestinal ascariasis.

Multiple tubular-shaped filling defects in the jejunum were seen on CT scan, consistent with ascarides in the small bowel (figures 1 and 2). Ova and parasite evaluation of the patient’s stool samples revealed numerous fertilized and unfertilized eggs. Ascaris lumbricoides is one of the most common nematodes to infect man. The prevalence of infection due to this organism can be as high as 80% in developing countries, especially in China and Southeast Asia [1]. With an estimated 4 million individuals infected in the United States, it is the third most common nematode infection in the United States and is most prevalent among the immigrant population [1].

Infection occurs via fecal-oral route after ingestion of the fertilized ova from contaminated food or water. Clinically, ascariasis can present in various ways, depending on the phase of infestation. Pulmonary ascariasis occurs when larvae released from ingested ova in the stomach migrate to the jejunum, cross the intestinal wall, enter the portal system, and eventually reach the pulmonary circulation and airways. As the larvae undergo further development in the pulmonary alveoli, the patient can present with symptoms of pneumonitis and peripheral eosinophilia. The larvae migrate from the lower respiratory tract to the tracheobronchial tree. When the host coughs, the larvae are swallowed and re-enter the gastrointestinal tract. Intestinal ascariasis begins when the larvae reach the jejunum, where they undergo final development into full-grown nematodes [1].

Most patients with intestinal ascariasis have mild symptoms that include nausea and intermittent abdominal discomfort. Some patients remain asymptomatic, with ascarides found incidentally on radiographic examination or ova found in stool samples [1]. The most common complication of intestinal ascariasis is small bowel obstruction, which is typically due to a physical obstruction caused by a large number of entangled worms. Other mechanisms of small bowel obstruction due to a worm bolus include volvulus and intussusception, which may lead to bowel ischemia or infarction. These mechanisms of small bowel obstruction are typically seen in children with large worm burdens [1]. The mortality rate among children with complicated intestinal obstruction may be as high as 24%; this high rate is attributable to delay in presentation [2]. Intestinal obstruction has been reported to occur in adults infected with only a few adult roundworms [3]. Intestinal obstruction may be caused by adherence of intestinal loops to an inflamed segment of the small bowel, which is what we believe was the reason for our patient’s partial small bowel obstruction [3]. A single ascaride may stimulate an inflammatory reaction in a segment of bowel through production of toxins or by causing a small perforation [3]. The ascarides may migrate from the jejunum to the duodenum and reach the ampulla of Vater. Symptoms of biliary colic, leading to an ileus, may occur as a single ascaride moves in and out of the biliary tract within a period of a few days to 1 week [1]. Ileus formation may mimic a partial small bowel obstruction with symptomatic nausea, vomiting, and abdominal pain. Rare complications of biliary ascariasis include hepatic abscesses, ascending cholangitis, and intestinal perforation leading to granulomatous peritonitis [1].

Ascariasis is diagnosed by visualizing ova in the stool. Occasionally, sputum or gastric aspirates may contain larvae as they migrate through the lungs during the pulmonary phase, and they may be detected before ova are present in the stool. There is no effective serological test for ascariasis. Peripheral eosinophilia can occur during the pulmonary phase; however, this is neither sensitive nor specific.

A variety of agents are currently used to treat intestinal ascariasis. The preferred treatment is a single 400-mg dose of albendazole. Mebendazole given at a dose of 100 mg twice daily for 3 days has been shown to be as efficacious as albendazole, with a cure rate of ~96% [4]. Both agents inhibit microtubule assembly and impair glucose uptake in the organism. Pyrantel pamoate is a neuromuscular blocking agent that causes worm paralysis and leads to the organism’s expulsion from the gastrointestinal tract through peristalsis. Piperazine is an anthelminthic agent that causes flaccid worm paralysis; because of its neurotoxicity, it is used less commonly than other treatments. Broader spectrum antihelminths, such as ivermectin [5] or nitazoxanide [6], may be beneficial to patients living in areas of endemicity who may have mixed infections with ascariasis and other helminths. Ascariasis-associated intestinal obstruction is managed with conservative treatment consisting of decompression through nasogastric suction, fluid and electrolyte repletion, and anthelminthic therapy. Surgical intervention requiring enterotomy or resection may be necessary if the complete obstruction does not improve within 24–48 h.

Our patient’s partial bowel obstruction quickly resolved with conservative management. The patient was treated with a single 400-mg dose of oral albendazole and is currently asymptomatic.

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Nimfa C. Teneza-Mora, Eric A. Lavery, and Helen M. Chun
Division of Infectious Diseases, Naval Medical Center San Diego, San Diego, California

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