Ascariasis presenting as Acute Abdomen: A Rare Case

ABSTRACT

Ascaris lumbricoides is a common intestinal parasite found in humans prevalent in countries with low socioeconomic status. The disease can occur in all age groups but is more common in preschool-aged children. It causes significant medical, surgical, and social complications. Reported complications include small intestinal obstruction, volvulus, and intussusception. Obstruction of the intestinal tract by a mass of A. lumbricoides is one of the serious and lethal complications.

We present herein a case of A. lumbricoides infestation in a 7-year-old girl, presenting as acute abdomen. Prompt surgical intervention saved the child.

Keywords: Acute abdomen, Ascaris lumbricoides, Intestinal obstruction.


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INTRODUCTION

Ascariasis is an intestinal parasitic infection caused by Ascaris lumbricoides (roundworm). Its highest prevalence is observed in tropical and subtropical areas. It is seen in underdeveloped countries where poor sanitation is common.1,2 Most cases remain asymptomatic. However, heavy infestation, especially in children, can lead to serious complications like intestinal obstruction, requiring urgent surgical intervention. We report a rare case in a 7-year-old girl presenting with intestinal obstruction, perforation, and gangrene following heavy ascariasis.

CASE REPORT

A 7-year-old female child came to emergency with severe colicky abdominal pain and vomiting. She had had constipation for the last 3 days. The girl came from a family of very low socioeconomic status. Her father was a farmer. The girl had a history of pica.

On general examination, she was found to be emaciated and pale. Her oral temperature was 37.5°C, and blood pressure was 100/60 mm Hg. Pulse was regular with a rate of 120 beats per minute, and respiratory rate was 35 per minute. Cardiovascular examination was within normal limits. No neurological deficits were present. Physical examination revealed abdominal tenderness and rigidity in the central and mid-abdomen. There was no organomegaly. Auscultation revealed a silent abdomen. On investigation, her hemoglobin was found to be 10 gm%, while the complete blood count, liver function test, and renal function test were within normal limits. X-ray showed multiple fluid levels, indicative of intestinal obstruction. Ultrasonography of the abdomen revealed multiple linear echogenic foci in distal small bowel loops with a railway track like appearance, which was suggestive of worms.

Decision of immediate laparotomy was taken after correction of fluid and electrolyte imbalance, prophylactic broad spectrum antibiotics, blood transfusion, and analgesics. No antihelminthic drug was used at this stage. Intraoperative exploration through a right lower paramedian incision revealed serous collection. Laparotomy revealed necrosis of ileum, measuring approximately 21 cm along with bolus of worms (Fig. 1). The necrosed part was resected and primary end-to-end anastomosis was performed.

At laparotomy, milking was performed by hand to move the worms to the jejunum to facilitate their extrusion. An enterotomy was done in the intestine to extract worms by sponge-holding forceps. The worms
approximately filled a kidney tray (Fig. 2). The freshly expelled worms were pinkish and cylindrical. Both male and female roundworms were identified. Adult males measured 15 to 30 cm in length and 2 to 4 mm in diameter. Their posterior end was curved with two copulatory spicules. Adult females measured 20 to 40 cm in length and 3 to 6 mm in diameter. Their posterior end was straight and conical. These worms were identified as *A. lumbricoides* from their gross appearance and the size and shape of the eggs along with microscopic confirmation. Patient was discharged on the 7th postoperative day without complications. She is on regular follow-up.

**DISCUSSION**

*Ascaris* is the largest nematode to infect the human intestine as a facultative parasite throughout its adult life. It is prevalent in the tropics and subtropics with an estimated prevalence of 25% worldwide, where unhygienic disposal of human excreta is common. The prevalence of *Ascaris*-related intestinal obstruction in India is 9.2 cases per 100,000 persons.\(^2,3\)

The mode of *A. lumbricoides* infection is by ingestion of embryonated eggs in raw vegetables, water, or soil-contaminated hands. The fertilized eggs hatch in the intestine. The released larvae penetrate the intestinal wall to reach the right side of the heart, pulmonary circulation, and then the alveoli. When the larvae are coughed up by the host, they are swallowed back into the intestine to develop into adult worms. They most commonly reside in the jejunum and ileum.\(^4,5\)* Ascariasis* can occur at all ages, but it is most common in children between 2 and 10 years of age.

The clinical features of *A. lumbricoides* infection are variable. Depending upon the parasitic burden, they may remain asymptomatic or become symptomatic. Normally, they live in the stomach and reach up to the ileocecal valve region without causing any serious symptoms. When the environment becomes intolerable for their living, they migrate to more appropriate areas of the intestinal tract. The symptoms are related to the migration of either the larval form or the adult worm in the intestine. Majority of the patients present with subacute or acute clinical course with severe abdominal pain, fever, dehydration, vomiting, and abdominal distension. In children, intestinal obstruction caused by heavy worm burden is the most common manifestation of the disease.\(^6,7\) Pulmonary manifestations may be due to the larval migration through the lungs. Adult worms can lead to serious clinical problems during their migration, including acute pancreatitis, acute cholecystitis, liver abscess biliary colic, cholangitis, intestinal obstruction when present in large numbers, and even perforation. They may occasionally cause appendicitis and obstructive jaundice. Massive gastrointestinal bleeding with ulceration, perforation, and even gangrene of the bowel wall is a rare and fatal reported complication.\(^5,6,8-11\) Children are likely to suffer from protein malnutrition and vitamin A deficiency.\(^12\)

In acute obstruction, patients are ill for several days before presentation. There may be signs of severe dehydration and toxic appearance along with vomiting, abdominal pain, and distension. Fever and leukocytosis are common. The passage of adult worms in sensitive persons may give rise to intense anal pruritus, vomiting of worms, and edema of the glottis. When the larvae wander into the brain, they cause granulomas, presenting as small tumors in the eye, retina, or brain.

Complications of *Ascaris* infestation include obstruction of the small intestine, volvulus, intussusception, pancreatitis, appendicitis, and cholecystitis. Intestinal obstruction can be fatal at times. Multiple worms form a large bolus, resulting in mechanical obstruction of the bowel lumen, which is the most frequent cause of *Ascaris*-related bowel obstruction. The bolus of worms may serve as a leading point in intussusception or a pivot in small bowel volvulus. The worms may inhabit the ileocecal valve, where they secrete neurotoxins, prompting small bowel contraction, which together with high worm burden further obstruct the intestine. A host’s inflammatory reaction to worm-derived hemo-lysins, endocrinolysins, and anaphylatoxins can further aggravate the obstruction.\(^7\) Volvulus, intussusception, or increasing pressure on the intestinal wall leads to necrosis. The roundworms do not attach to the intestinal wall, but rather remain in the lumen by powerful, continuous muscular movement. In the lumen, the worms feed on the nutrients in the host’s intestinal tract. These worms remain in the intestines for several years without causing disease.

The mechanism of *Ascaris*-induced perforation of the small bowel is highly debatable. Patients residing in

**Fig. 2:** Bolus of *Ascaris* filling almost the entire kidney tray
the tropical countries suffer from diseases associated with intestinal ulcerations. These include typhoid enteritis, tuberculosis, and amoebiasis. During extreme conditions, such as inflammation, starvation, or worm bolus obstruction, some parasites are believed to migrate into the ulcers, leading to perforations. Another possible explanation is that the large worm bolus can lead to pressure necrosis and gangrene. The already diseased bowel becomes susceptible to rupture by the burrowing action of the worms.1-6

When the patients are febrile or are given anesthetic drugs, the worms may migrate and wander into the bile ducts, ampulla of vater, appendix, perineal sinuses, and eustachian tubes. Thus, it is important not to give any drugs, especially when there is a possibility of *Ascaris* infection. Deworming should be carried out when the children are ill and febrile or before giving an anesthetic drug.

Frequent diagnosis with clinical symptoms and hematological investigation is not possible. Plain X-ray of abdomen may show a “whirlpool” pattern of intraluminal worms in most of the cases.13 X-ray may show air fluid levels. Perforation may be seen as free air under the diaphragm on an X-ray. Stool test shows abundant ova and parasites, along with high number of eosinophils. Blood counts may demonstrate marked leukocytosis and eosinophilia even up to 25% or more. Abdominal ultrasound shows the characteristic “railway track” sign and bull’s-eye appearance, thus helping in the confirmation of diagnosis.14

Management of a majority of uncomplicated cases is achieved successfully using antiparasitic drugs, such as albendazole, mebendazole, or pyrantel pamoate. Partial intestinal obstruction may resolve spontaneously with conservative treatment, including bowel rest, intravenous fluids, and nasogastric decompression.7 Prompt treatment to prevent life-threatening complications should be undertaken. If there is necrosis, resection and primary anastomosis as emergency surgical treatment become necessary. Subacute cases are successfully treated conservatively until spontaneous resolution.5,15,16 The type of surgery depends on the findings during laparotomy. If the bowel is viable and the obstruction is at the level of ileum, milking of the worms to the cecum can be done carefully without causing trauma to the bowel wall. If the obstruction is at the level of the jejunum along with multiple boluses of worms, enterotomy should be done through a longitudinal incision with removal of worms by sponge-holding forceps, taking care to avoid contamination of the peritoneal cavity. In volvulus, where the intestinal wall is thin, milking should not be attempted as it may cause tears in the serosal layer. Damage to the worms during milking should be avoided as this may release toxins. Cases presenting with gangrene, perforation, or intussusception with nonviable bowel segment resection with primary anastomosis may be required.15,16

**CONCLUSION**

There should be a high suspicion for parasitic infestation in preschool children with sudden acute intestinal obstruction to prevent serious life-threatening complications. Prompt surgical intervention in patients with acute intestinal obstruction results in a good outcome. Partial intestinal obstruction from *A. lumbricoides* may resolve spontaneously with conservative treatment.

The awareness of ascariasis and its preventive measures should be included in all health education programmes and should be delivered to school children and their mothers to overcome the risk of infection.

Early recognition based on local prevalence can prevent serious surgical complications, morbidity, and mortality associated with intestinal obstruction.

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**REFERENCES**