

An Unusual Case of Intestinal Obstruction due to *Ascaris lumbricoides*: A Case Report

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ABSTRACT

A 6 years and 6 month old child hailing from Dhaka admitted into AKMMCH with the complaints of abdominal pain for 3 days and vomiting for 1 day. Abdominal pain was in umbilical region, severe, colicky, non-radiating and aggravated after taking meal. Patient's mother also complained about vomiting for 1 day, 3-4 times, contained ingested food particle and associated with anorexia. Patient did not pass the stool for 1 day. Patient was infested with *Ascaris lumbricoides* 6 months back. On examination vitals were normal, abdomen was soft and tender, there was ill defined lump present in right iliac fossa, firm in consistency, adhere to underlying structures and free from overlying skin. So it is clinically diagnosed as a case of intestinal obstruction with appendicular lump. Further investigations confirmed that it is a case of intestinal obstruction due to worm bolus.

Key words: *Ascaris lumbricoides*, intestinal obstruction,

Introduction

Ascariasis remains the leading helminthic infection worldwide, disproportionately affecting children in tropical countries with low and middle-income.¹ Ascariasis affects approximately 0.8 billion people globally, with the highest prevalence noted among children aged 2–10 years.¹ It is endemic in the Middle East and South America especially in under-developed countries where poor sanitation, the most important risk factor for infection.^{2,3} The intestinal nematode *Ascaris lumbricoides* (*A. lumbricoides*) infects approximately 25% of the world's population annually. Although the infection is often asymptomatic, its effects may contribute substantially to child morbidity when associated with malnutrition, pneumonia, enteric diseases and vitamin A deficiency. Symptomatic ascariasis could manifest as pneumonitis, hepatobiliary or pancreatic damage, growth retardation, intestinal obstruction (IO), & peritonitis.²

Ascariasis is a common cause of IO in children,^{3,4,5} with peak age between 3 to 5 years.^{5,6,7} Treatment options are variable and generally entail external bowel resection and end-to-end anastomosis, enterotomy and milking out of worms, or manual exposition and advancement of the mass of writhing worms toward the colon.^{6,7} Here, we report the case of a 6.5-year-old girl with mechanical IO due to *A. lumbricoides* successfully treated by enterotomy and milking out of the worm bundle. In addition, we highlight how a single case of IO due to *A. lumbricoides* could reflect loopholes in public health strategies & can put in place to control, eradicate and discuss possible solutions. Although ascariasis cases are usually asymptomatic, infection leads to malnutrition in children and causes about 3000–60,000 deaths every year, usually as a result of intestinal obstruction.⁵⁻⁷

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The most common causes of acute abdomen are acute appendicitis, acute peptic ulcer, acute cholecystitis, acute pancreatitis, intestinal obstruction & acute pyelonephritis.^{8,9} One cause of intestinal obstruction by parasites is *A. lumbricoides* infection. The most commonly known serious and lethal complication of *A. lumbricoides* infection is intestinal obstruction, caused by an aggregated mass of *A. lumbricoides* worms, which may develop acutely or subacutely.¹⁰ Early diagnosis of intestinal obstruction caused by *A. lumbricoides* using ultrasonography is very useful to avoid its serious and lethal complications.¹¹ Emergency surgical treatment may be necessary in acute intestinal obstruction in which the mass of the parasite obstructs the intestinal lumen or intestinal obstruction develops due to volvulus.¹² Meanwhile, subacute cases are successfully treated conservatively until spontaneous resolution.^{3,13} The aim of this report is to present a case which was clinically diagnosed as a case of appendicular lump, eventually proven to be a case of bowel obstruction caused by *A. lumbricoides* in a tertiary care hospital.

Case report:

A 6 years and 6 month old immunized Muslim child, 2nd issue of a non-consanguineous parents, hailing from Rayer Bazar, Dhaka admitted into Pediatric ward of AKMMCH with the complaints of abdominal pain for 3 days and vomiting for 1 day. According to the statement of the patient's mother, the baby was reasonably well about 3 days back. Then she developed abdominal pain in umbilical region, gradual in onset, colicky in nature, did not radiate to any other region. Pain was aggravated after taking food and subsided spontaneously. For last 1 day the pain was very severe and was present in all over the abdomen, onset was sudden after taking food. Pain was not associated with fever, burning micturation, bloody diarrhea & abdominal distension.

Patient's mother also complained about vomiting for 1 day. Vomiting occurred for 3-4 times. Vomiting usually occurred after taking food. Vomitus contained food particles, did not contain blood, not bile stained and non foul smelling. On further enquiry patient's mother stated that the baby was anorexic for 3 days. The baby did not pass stool for last 1 day. Her bladder

habit was normal. Patient's mother was able to show us the stool examination report from 6 months back which revealed presence of R.B.C and *Ascaris lumbricoides* in microscopic examination of stool. Patient's mother said about receiving unspecified antihelminthic.

On examination her heart rate was 84 beats/min, respiratory rate was 24 breaths/min, BP was 110/70 mm of Hg and temperature was normal. On abdominal examination, abdomen was normal in size and shape. Umbilicus was centrally placed and inverted. No engorged vein and visible peristalsis was present. On palpation abdomen was soft and tender. There was a ill defined lump present in right iliac fossa about 4cm * 2cm in size, firm in consistency, was adhere to underlying structures and was free from overlying skin. Percussion note was dull over the lump. The Bowel sound was sluggish. Other systemic examination reveals no abnormality. So it was clinically diagnosed to be a case of intestinal obstruction with appendicular lump. Abdominal X-ray A/P view revealed multiple air-fluid levels, intestinal loops dilated and a whirlpool image in the right iliac fossa suggestive of intestinal obstruction. USG of whole abdomen revealed there are numerous linear echogenic structures having central lucency within its giving bulls eye sign on transverse scan and railway sign on longitudinal scan is noted in the small bowel lumen in right lower quadrant of abdomen. Loops of bowel are mild to moderately dilated. Peristaltic movement is almost absent. Mild to moderate free fluid collection is seen in between bowel loops and peritoneal cavity. This report was suggestive of acute intestinal obstruction due to entangled bolus of intestinal ascariasis. Serum electrolytes report, haematological report and urine analysis report revealed no abnormalities.

atient was kept nothing per oral with infusion 5% dextrose in 0.225% sodium chloride, Inj. Ceftriaxone & Inf. Metronidazole,. After proper counseling and taking informed written consent from parents patient was taken to Operation Theater for removal of worm bolus with proper antibiotic coverage. With proper aseptic precautions abdomen was open with transverse abdominal incision. After entering the abdomen small Pintestine was found hugely

on jejunum and ileum for removal of worms. Manually all palpable worms were removed by milking and instrumentation. After checking entire small & part of large intestine, intestinal openings were closed by extra-mucosal anastomosis by using vicryl 3/0. Maintaining proper haemostasis abdomen was closed in layers. Skin was closed by intra-dermal stitch with vicryl 2/0. After removal of worms and proper medication the baby's condition improved and we released her when she got fully recovered.



Fig 1 : Abdominal X-ray A/P view revealed multiple air-fluid levels, intestinal loops dilated and a whirlpool image in the right iliac fossa suggestive of intestinal obstruction.



Fig 2: USG of whole abdomen revealed there are numerous linear echogenic structures having central lucency within its giving bulls eye sign on transverse scan and railway sign on longitudinal scan is noted in the small bowel lumen in right lower quadrant of abdomen. Loops of bowel are mild to moderately dilated. Peristaltic movement is almost absent. Mild to moderate free fluid collection is seen in between

bowel loops and peritoneal cavity. This report was suggestive of acute intestinal obstruction due to entangled bolus of intestinal ascariasis.



Fig 3: The AL forming lump & causing obstruction of lumen is visible from outside.



Fig 4 : presence of worm after enterotomy



Fig 5 : Manual Removal of worm bolus.

Discussion:

Ascariasis is a world-widely distributed parasitic infection, especially in tropical and subtropical areas where unhygienic disposal of human excreta is common. The mode of *A. lumbricoides* infection is by the 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 to the alveoli. When the larvae are coughed up by the host, they are swallowed back into the intestine to develop into adult worms.^{3, 7, 17, 18} The early diagnosis of complicated ascariasis and surgical intervention are essential to minimize high morbidity and mortality of complicated ascariasis. An *A. lumbricoides* infestation could present cholecystitis, cholangitis, pancreatitis, intestinal volvulus, intussusception, appendicitis, intestinal necrosis, or IO, the latter being the more frequent.^{7, 8, 10} Complications can be observed in all ages but children between 3 and 5 years are especially susceptible, caused by large number of worms in a diminished intestinal diameter and the ileocecal valve.¹⁹ *A. lumbricoides* excrete a neurotoxin, which produces spasticity conducting to obstruction, and intestinal inflammation can be associated with liberation of other toxins including anaphilotoxins, hemolysins, and endocrinolysins by worms.^{6, 11} Frequent symptoms are abdominal pain, nausea, vomiting, diarrhea, and presence of worms in vomit or feces. The physical examination can present abdominal tenderness, bloating, abdominal mass, or rigidity. X-rays can reveal air fluid levels and shadow of roundworms, with a “Whirlpool” image in some cases.¹² Ultrasound will be useful in identifying thick echogenic strip with central anechoic tube; multiple linear or curvilinear echogenic strips without acoustic shadowing; “railway track” sign; “3-line” or “4-line” sign, or “bull’s eye” appearances on transverse scan.⁸

In the case of intestinal sub-occlusion, medical treatment with intravenous fluids and electrolytes, broad-spectrum antibiotics, and nasogastric drainage must be done. Patients with complete obstruction would be candidates for laparotomy after initial resuscitation and antibiotic treatment. Surgical treatment includes the extraction of the worms from

the colon by enterotomy or, in case of necrosis, an intestinal resection with entero-entero anastomosis. In the presented case the extension of the infestation did not allow milked all *Alumbricoides*. to colon and could injure the intestinal wall, reason why an ileum enterotomy was done, allowing the evacuation of most roundworms and leaving the rest to medical treatment with albendazole after the restart of intestinal transit. The presence of at least 2 of the following criteria is considered for resolution: disappearance of colicky pain, beginning of defecation, or disappearance of air fluid levels. After resolution, mebendazole 100mg twice daily for 3 days must be started and repeated 6 weeks after discharge to eradicate any worm.

Conclusion:

Despite considerable progress made on the control of soil-transmitted helminthiasis in Bangladesh, the program faces a number of bottlenecks. Funding is inadequate, making data acquisition and hence remapping of high-risk zones difficult. In those high risk zones where most children live is difficult, where community sensitization on soil-transmitted helminthiasis and proper education on the right environmental hygienic practices are lacking. All these challenges once addressed could go a long way to help achieve recently set sustainable development goals.³ The awareness of ascariasis and its preventive measures should be included in all health education programmes and should be delivered to schoolchildren and their mothers to overcome the risk of infection.

Conflict of interest: None.

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