### **Case Report**

DOI: http://dx.doi.org/10.18203/2349-2902.isj20190416

# Ileal volvulus due to ascaris lumbricoides: a diagnosis revisited

### Ipseet Mishra<sup>1\*</sup>, Sudip Haldar<sup>1</sup>, Souvik Paul<sup>2</sup>

<sup>1</sup>Department of Surgical Oncology, Saroj Gupta Cancer Centre and Research Institute, Thakurpukur, Kolkata, India <sup>2</sup>Department of Surgical Gastroenterology, BLK Super Speciality Hospital, New Delhi, India

Received: 22 October 2018 Revised: 05 December 2018 Accepted: 10 December 2018

# \*Correspondence:

Dr. Ipseet Mishra,

E-mail: drimishra13@gmail.com

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#### **ABSTRACT**

Ascariasis infestation is a common helminthic disease in developing countries with a wide spectrum of clinical presentations, one of which can be acute abdomen. Small bowel volvulus is a serious life-threatening emergency. The aetiology may be primary as is often seen in Africa and Asia, while in Western countries other predisposing conditions usually initiate the volvulus. Ascariasis is highly prevalent in India and so, a myriad of different presentations is quite obvious. Here the authors have reported a case of a 6year old boy presenting with features of acute intestinal obstruction-central abdominal pain, repeated vomiting and abdominal distension. After evaluation with abdominal radiography and ultrasonography, exploratory laparotomy was planned. A secondary ileal volvulus compact with worms of ascaris lumbricoides was found. Resection of non-viable ileum was done after evacuation of worms by enterotomy followed by primary anastomosis. Prompt clinical diagnosis, a high index of suspicion for complications and early surgical intervention are critical in minimizing morbidity in cases of Intestinal Ascariasis.

Keywords: Ascariasis, Ileal volvulus, Small bowel volvulus

#### **INTRODUCTION**

Ascaris lumbricoides is one of the largest parasites that infest the human bowel, common in regions with poor sanitation in the tropics and subtropics. Infestation with ascaris lumbricoides is considered a worldwide phenomenon affecting billions of humans, even in this 21<sup>st</sup> century with modern medical advancements. Infestation occurs through feco-oral route in all age groups but affects children in majority. The worm may be found from the stomach to colon but commonly inhabits the jejunum and proximal ileum.

Though around 140 million cases are estimated to be infected with ascariasis in India, the prevalence of ascaris related intestinal obstruction is around 9.2 per lakh cases. 1,2 Heavy worm burden is the major causal factor in cases of complicated ascariasis. Common acute surgical

abdomen caused by ascariasis include intestinal obstruction, volvulus or intussusception and perforation. Small bowel volvulus is a serious life-threatening surgical emergency that needs immediate attention. Irrespective of worm burden, the intestinal form of ascariasis needs definitive treatment to avert major complications. Herein, the authors have discussed a case of secondary ileal volvulus in a child due to ascariasis infestation.

#### **CASE REPORT**

A 6-year-old boy presented to the emergency department with complaints of colicky central abdominal pain, anorexia and repeated emesis for last 4 days with obstipation and abdominal distension for 2 days. He had a previous history of passage of worms with stool. There was no h/o fever, passage of worms per mouth or passage

of bloody mucus. Boy's immunization was complete and he had no major illness in the past. Vitals on examination: pulse-114/min, BP-90/60mm of Hg, respiratory rate-28/min, temperature- 99°F and body weight-15kgs. Clinical examination revealed distended abdomen with full flanks, no visible peristalsis, tenderness all over the abdomen, no guarding or rebound tenderness, no palpable lump or organomegaly, IPS-hyperperistaltic and Per Rectally-no stool with ballooning+.

Blood profiling was normal except for Haemoglobin-9gm%, Total leucocyte count-18,600/cmm and Eosinophil count-10%. Straight X-ray abdomen showed multiple air-fluid levels. USG whole abdomen had multiple tubular echogenic structures with central echofree lines within intestines and distended and dilated intestinal loops with gas and fluid and mild ascites (Figure 1).



Figure 1: Multiple linear echogenic strips without acoustic shadowing and parallel lines.

A diagnosis of acute intestinal obstruction due to worm infestation was made and the family was counselled with informed consent. After initial resuscitation and preoperative optimization with blood transfusion and intravenous antibiotics, exploratory laparotomy was done under general anaesthesia with infra-umbilical transverse incision. Small bowel volvulus was found involving a length of 25cm of ileum at a distance of 25cm proximal to ileocecal junction (Figure 2 and 3). The volvulus portion was compact with worms of Ascaris lumbricoides. Most of the involved gut was congestive with focal areas of necrosis and impending perforation.

No bands or congenital anomalies were noted. Milking was avoided to prevent serosal injury in edematous bowel loops. Enterotomy was done to evacuate the roundworms out of intestinal loops (Figure 4). Approximately 15cm of non-viable ileum was resected out and end-to-end primary ileal anastomosis was done in two layers with PDS sutures. Abdomen was closed after putting a drain at the pelvis. The child recovered well and was discharged on the 6<sup>th</sup> post-operative day. Two dosages of

Albendazole were given at 6 weeks interval postoperatively for complete eradication.



Figure 2: Operative illustration showing ileal volvulus on laparotomy.



Figure 3: Gut loops after detorsion, inset picture showing ileal volvulus on laparotomy.



Figure 4: Multiple roundworms/ascaris lumbricoides packed in the intestinal lumen.

#### **DISCUSSION**

Ascaris lumbricoides is one of the largest parasites that infest the human bowel, common in regions with poor sanitation in the tropics and subtropics. Infestation with ascaris lumbricoides is considered a worldwide phenomenon affecting billions of humans.

Common acute surgical abdomen caused by ascariasis include intestinal obstruction, volvulus or intussusception and perforation usually involving the appendix or Meckel's diverticulum, ileum, and rarely through areas of pre-existing bowel pathology. Acute pancreatitis, acute cholecystitis, liver abscess and acute appendicitis are other infrequent clinical scenarios. Small bowel volvulus is a serious life-threatening surgical emergency. The aetiology may be primary, as is often seen in Africa and Asia, while in Western countries other predisposing conditions like bands, adhesions, internal hernia, and Meckel's diverticulum usually initiate the volvulus.

Ascariasis is very prevalent in developing countries like India, where 70% of children are found to be infested with ascariasis.<sup>3</sup> Around 140million cases are estimated to be infected with ascariasis in India.<sup>1</sup> The overall prevalence was calculated to be between 0.4 and 71.87% for ascariasis in India till 2015.<sup>4</sup> Incidentally, highest prevalence of ascariasis (>50%) was reported from six states of Tamil Nadu, Andhra Pradesh, Bihar, Assam, Jammu-Kashmir and West Bengal, covering nearly 30% of Indian population.<sup>5</sup>

Ascariasis was accounted for 63% of cases of paediatric intestinal obstruction in an Indian study by Sheikh KA et al, while the incidence of volvulus caused by ascariasis was reported to be around 31% in a study by Ramareddy RS et al.<sup>3,6</sup> This clearly highlights the high incidence of ascariasis in India.

Intestinal ascariasis can usually be diagnosed with conventional radiography or ultrasonography of the abdomen. X-rays can reveal air-fluid levels, a radiolucent shadow of roundworms, with a "Whirlpool" image or as "cigar bundle" appearance.

The various USG appearances of ascaris lumbricoides have been described as thick echogenic strip with central anechoic tube, multiple linear or curvilinear echogenic strips without acoustic shadowing, a "winding highway" or "parallel lines"; "railway track" sign; "3- line "or "4-line" sign on longitudinal scan and a "doughnut" or "target" sign and "bull's eye" appearances on transverse scan. 8 Contrast studies, CT or MRI may be useful but are not essential, especially in acute emergencies.

Uncomplicated ascariasis can be successfully managed with anti-helminthic drugs like albendazole, mebendazole or pyrantel pamoate. Even in cases of intestinal obstruction, conservative treatment with fluid resuscitation and hypertonic saline enema have been shown to be relieving in 50-85% of the cases.<sup>8,9</sup>

Surgical intervention was reserved for cases developing abdominal guarding or rigidity in a 5year retrospective study.<sup>8</sup> The procedure of choice should be decided on-

table on an individual basis, depending upon the laparotomy findings. Detorsion of the volvulus with enterotomy at the point of maximum worm burden to extract as many roundworms should be done, provided the viability of the intestinal wall has been ascertained beforehand. Milking of worms should not be attempted as it may cause serosal tears or may break the worms causing toxin release. Non-viability of the bowel wall in cases of gangrene or perforation should prompt the surgeon to proceed with resection followed by primary anastomosis or stoma formation. <sup>10</sup>

Prompt clinical diagnosis, a high index of suspicion for complications and early surgical intervention are critical in minimizing morbidity. Health awareness about sanitation and waste disposal, proper hand hygiene, safe drinking water, regular deworming in pre-school and school going children with a dedicated national Soil-Transmitted Helminthiasis (STH) programme are direly needed to attain ascariasis eradication in a sustainable way.<sup>11</sup>

#### **CONCLUSION**

Ascariasis should be considered in the differential diagnosis of all cases of paediatric intestinal obstruction and prevention strategies must be developed to eradicate the worm and minimize its complications.

Funding: No funding sources Conflict of interest: None declared Ethical approval: Not required

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**Cite this article as:** Mishra I, Haldar S, Paul P. Ileal volvulus due to ascaris lumbricoides: a diagnosis revisited. Int Surg J 2019;6:614-7.