

Case Study

<https://doi.org/10.20546/ijcmas.2017.606.150>

## Acute Abdomen by *Ascaris lumbricoides*: A Serious Complication

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### ABSTRACT

#### Keywords

*Ascaris lumbricoides*,  
Acute abdomen,  
Intestinal  
obstruction.

#### Article Info

Accepted:  
19 May 2017  
Available Online:  
10 June 2017

*Ascaris lumbricoides* is one of the most common helminth infecting humans. It can affect all age groups but is more prevalent in pre-school children belonging to low socio economic status. Left untreated, it can cause significant and serious complications which include small intestinal obstruction, volvulus and intussusception which require urgent surgical interventions. *Ascaris lumbricoides* infection should be kept as one of the differential diagnosis of acute abdomen especially in Indian children to avoid serious complications.

### Introduction

*Ascaris lumbricoides* is one of the most common intestinal parasites causing Ascariasis in pre-school children living in under-developed countries with poor sanitation (Schulze *et al.*, 2005; Steinberg *et al.*, 2003). About 30 % of adult and 60-70% children in endemic areas have worm infestation (Khuroo *et al.*, 1989). Most of the cases however, remain asymptomatic, but in cases with high worm burden they can produce serious complications like intestinal obstruction or perforation which requires urgent surgical interventions (Agrawal *et al.*, 2016). Though *Ascaris lumbricoides* infection can be diagnosed microbiologically (Arora *et al.*, 2005), X-ray and ultrasonography is a quick, safe, and non-invasive tool for early diagnosis (Mehta *et al.*, 2010; Mani *et al.*,

1997). The authors present this case with the objective is to create awareness regarding the clinical presentations of *Ascaris lumbricoides* infection so as to avoid serious complications. Therefore, Ascariasis should be kept as a differential diagnosis of acute abdomen. In spite of Ascariasis being very common, to the best of our knowledge a case of *Ascaris lumbricoides* presenting as acute abdomen with intestinal obstruction has not been reported from Meerut City.

### Case report

A 6 year-old- boy, presented to the Emergency Department of C.S.S. Hospital (associated with Subharti Medical College, Meerut) with complaints of severe colicky

pain in abdomen, low grade fever, loss of appetite for last 3 days. There was history of vomiting and inability to pass flatus and stool for last 2 days. The boy's father gave history of expulsion of white coloured live worm in vomitus in the recent past. Moreover, he gave history of repeated attacks of vague abdominal pain and diarrhoea in the past. The boy had a history of pica. The boy's parents were both labourer's working and living in the construction site and belonging to the low socio economic status group. They were unaware about hand hygiene and cleanliness. The boy was admitted to our hospital for further management.

On clinical examination, the child was pale, thin built, malnourished and very irritable. His weight was 15 kg. His pulse rate was 120/min, blood pressure was 100/60 mm of Hg and the body temperature was 100°F. Examination of the respiratory system revealed, respiratory rate was 30/min. Cardio vascular and central nervous system examination was within normal limit. His hemoglobin was 9.4gm%, total leucocyte count was 15,700/cu mm with differential leucocyte counts showing 65% of neutrophils, 20% of lymphocytes and 15% eosinophils. Erythrocyte sedimentation rate was 40 mm/h. Liver function tests and renal function tests were within normal limits except his Na<sup>+</sup> was 128mmol/L. Per abdomen examination revealed soft, non-tender abdomen with a mass felt in lower abdomen. There was no organomegaly. Auscultation revealed very sluggish bowel sounds. Abdominal radiograph (X-ray) was suggestive of intestinal obstruction showing multiple air-fluid level (Fig. 1). Ultrasonography abdomen demonstrated free fluid seen in peritoneal cavity. Dilated bowel loops seen without peristaltic movements. Bowel loops are full of worms looking like a parallel paired lines like "railway tracks" in the intestinal lumen which

was suggestive of worms (Fig. 2). The child passed some stool while in the emergency on the day of admission. The stool was collected in a wide mouth universal container and send to Clinical Microbiology Laboratory for demonstration of ova and cyst. Direct microscopic examination of stool revealed abundant of both fertilized and unfertilized eggs of *Ascaris lumbricoides* (Fig. 3).

Based on the microbiological and radiological investigation a diagnosis of acute abdomen caused by *Ascaris lumbricoides* was made and conservative treatment was started with advice for laparotomy if condition persists. Unfortunately, the response to treatment and the clinical outcome of the patient could not be assessed as the boy's parents refused further treatment and took him against medical advice and we lost him on follow-up.

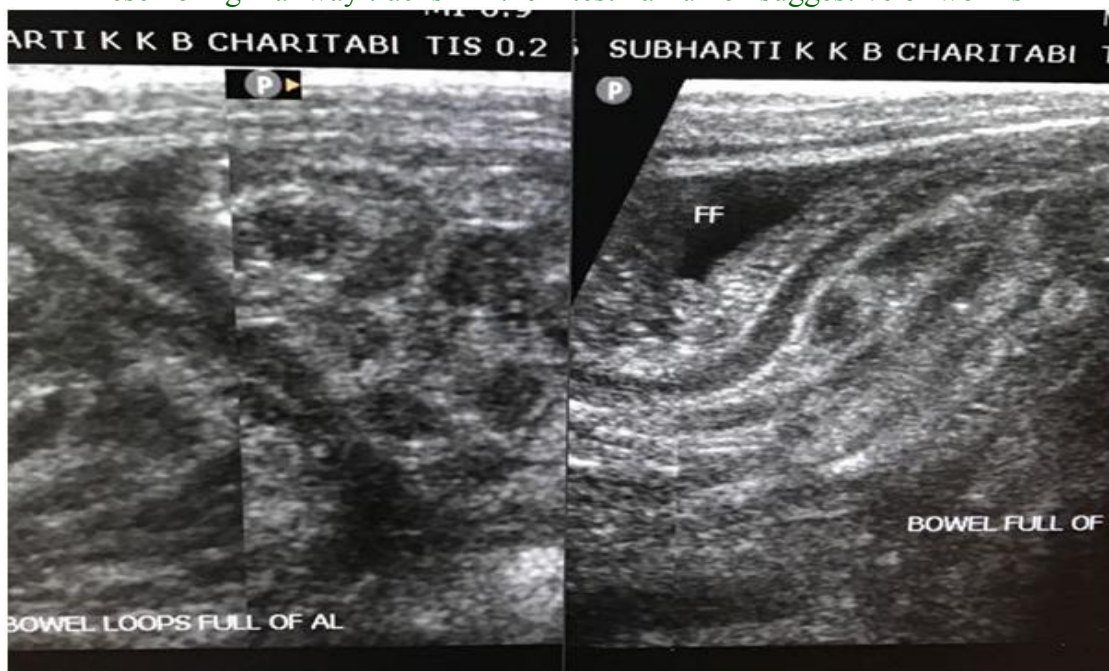
*Ascaris lumbricoides* a nematode that lives in human intestinal tract as a harmless inhabitant throughout life, it is prevalent in developing countries including India where unhygienic sanitation is there. It is usually seen in children who are malnourished and belong to the low socio economic group (Ronald *et al.*, 2000). Prevalence of *Ascaris* related intestinal obstruction is 9.2 per 100000 people (Shiekh *et al.*, 2010).

Ascariasis occurs by ingestion of embryonated eggs along with raw vegetables and water or through contaminated hands. Fertilized eggs hatch in intestine and released larva, after penetrating the intestinal wall, the larvae will reach right sided heart, pulmonary circulation and to the alveoli. These larvae are coughed up and swallowed back into the intestine where they developed into adult worms. They commonly live in small intestine, particularly the jejunum (Abdellatif *et al.*, 2013).

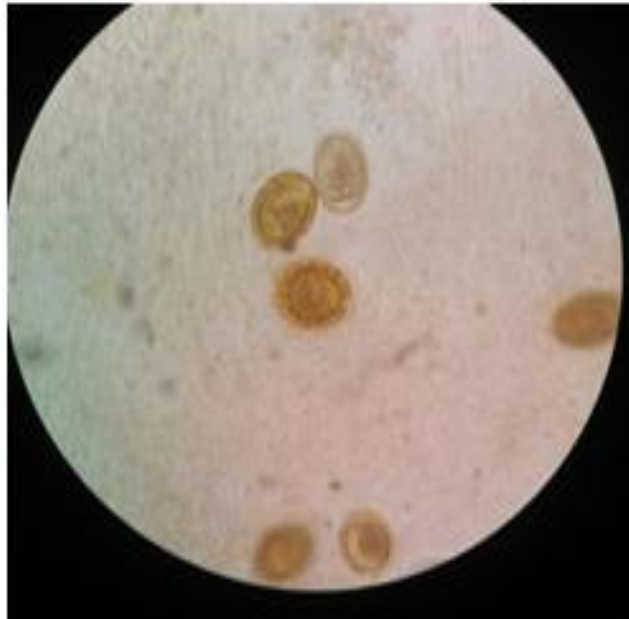
**Fig.1** X-ray abdomen showing multiple air-fluid level suggestive of intestinal obstruction



**Fig.2** Ultrasound abdomen showing bowel loops full of worms looking like parallel paired lines resembling “railway tracks” in the intestinal lumen suggestive of worms



**Fig.3** Wet mount of stool sample showing abundant of both fertilized and unfertilized eggs of *Ascaris lumbricoides* (x40)



Infection due to *Ascaris lumbricoides* have variable clinical features ranging from asymptomatic infection to symptomatic disease depending upon parasitic burden. Common symptoms are abdominal pain, anorexia, nausea, vomiting, fever, dehydration and abdominal distension. However, in children with heavy parasite load it may lead to intestinal obstruction. Multiple worms together form a large bolus and cause mechanical obstruction (Agrawal *et al.*, 2016) similar finding was seen in the present case.

*Ascaris* secrete neurotoxins which cause contraction of intestine which further increase the obstruction. This can further lead to volvulus, intussusception, gangrene and even perforation. Diagnosis is often difficult only on the basis of clinical symptoms and blood investigation which will show leucocytosis with eosinophilia. The stool examination will show abundant ova and parasites (Arora *et al.*, 2005). Similar finding was seen in the present case. Radiological examination is the mainstay of diagnosis.

X ray abdomen shows air-fluid level and USG abdomen show railway track sign (longitudinally) and bull's eye sign (horizontally) (Mehta *et al.*, 2010).

Management of uncomplicated case is usually done with the use of anti-helminthic drugs. Cases with partial obstruction can be managed conservatively. But complicated cases required surgery. Type of surgery depends upon the finding during laparotomy (Abdellatif *et al.*, 2013).

In conclusion, *Ascaris lumbricoides* infection has varied clinical manifestations. High suspicion should prompt early radiological assessment by abdominal radiograph (CXR) and ultrasonography which will identify most cases. Early diagnosis is the key to better outcome due to less chance of complication. Periodic screening of stool for ova and cyst is the key to early and non-expensive method of diagnosis of Ascariasis. For prevention, health education and awareness programs regarding hand hygiene and use of safe drinking water should be conducted frequently in schools and

localities for high risk groups to avoid such lethal complications.

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## How to cite this article:

Ankita Gupta, Anita Pandey, Bhaskar Thakuria, Kalpana Chauhan and VineetTomar. 2017. Acute Abdomen by *Ascaris lumbricoides*: A Serious Complication. *Int.J.Curr.Microbiol.App.Sci*. 6(6): 1278-1282. doi: <https://doi.org/10.20546/ijcmas.2017.606.150>