



## Varied Clinical Presentations Of Intestinal Ascariasis In Toddlers And School Going Children In A Tertiary Care Hospital In North India

Dr. Zul Eidain Hassan<sup>1</sup>, Dr. Malik Shakir Hussain<sup>2</sup>, Dr. Bushra Shakil<sup>3</sup>

**\*Corresponding Author:  
Dr. Bushra Shakil**

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

### Abstract

*Ascaris lumbricoides* is one of the largest intestinal parasites causing infestation of human gut. It causes various intestinal and extra-intestinal manifestations. The aim of present study was to study various clinical presentations of intestinal ascariasis in toddlers and school going children in a tertiary care hospital in North India. Majority of cases remain undetected due to absence of clinical manifestations. In symptomatic cases we found abdominal pain, vomiting, nutritional anemia, constipation, diarrhea, worm bolus obstruction, abdominal distension, volvulus and intussusception as the major clinical manifestations in children attending OPD and admitted to IPD. Diagnosis was suggested clinically by passage of ascaris worms or ova in stools or vomitus. Ultrasonographic evidence was used as a supportive method to diagnose ascariasis. Albendazole was used for eradication of ascarids. Majority of patients responded to oral Albendazole. Some patients needed surgical exploration. Patients were educated about safe food handling, safe disposal of excreta and proper sanitation and hand hygiene to reduce burden of ascariasis.

**Keywords:** Ascaris, Albendazole

### Introduction

*Ascaris lumbricoides* is the largest intestinal nematode of humans. Ascariasis is the term given to infestation of human intestine and the clinical manifestations resulting from ascaris infection. The manifestations could be either intestinal or extra intestinal. Natural habitat of adult worm is human jejunum. In humans, infection is acquired by ingestion of embryonated egg.<sup>1</sup>

Morphologically, adult worm is a large cylindrical organism with tapering of both ends. There is a marked sexual dimorphism between male and female worms. Female worms are longer than male worms both in length and in diameter.<sup>2,3</sup>

### Mode Of Infection:

After ingestion of embryonated egg, the shell is digested by gastric juices to release rhabdoid larva which migrate to caecum, enter veins of portal

system and are carried to the liver. Subsequently, they are carried to the heart and lungs via hepatic veins. In the lungs, the larvae penetrate alveolus to enter alveolar space, undergo moulting and ascend the tracheo-bronchial tree where they reach the pharynx and are re-swallowed subsequently the larvae reach small intestine where they develop into adult worm within a period of 2 to 3 months.<sup>2,3</sup>

Ascariasis is common in tropical regions of the world. It is largely attributed to poor sanitation and low socio-economic status.<sup>4,5</sup> Ascariasis is most prevalent in children aged 2 to 10 years.<sup>6</sup> The aim of the present study was to discuss the varied clinical presentations of intestinal ascariasis presenting to our hospital

### Material And Methods

It was a prospective observational study conducted in the Department of Pediatrics, Maternity and child care hospital Anantnag. Patients with documented

evidence of round worm infestation were included in the study. Both OPD and IPD patients were enrolled in the study. The study period extended over one year. Demographic features like age, gender, clinical features, management etc. were recorded and details entered in a predesigned proforma. Diagnosis was suspected on the basis of history of passage of worms per rectum or via mouth. Diagnosis was further supported by sonographic or X ray evidence of worms in the alimentary canal. Majority of patients were managed on outpatient basis. Patients with worm bowel obstruction, sub-acute intestinal obstruction, volvulus, intussusception and perforation were admitted. Outpatient management was carried out by giving oral Albendazole. Absence of ova in stools was used as marker for success of Albendazole

therapy. Patients with inadequate elimination or re-infestation were given repeat dose of Albendazole.

**Results**

A total of 280 patients were diagnosed with intestinal ascariasis during the study period. The male to female ratio was 2.2:1. We encountered patients as young as 8 months and as old as 14 .Peak occurrences were in the age group of 5 to 8 years. Following symptoms were seen in decreasing order of frequency; abdominal pain (100), vomiting (65), nutritional anemia (40), constipation (20), diarrhea (18), worm bolus obstruction (17), abdominal distension (10), volvulus (7) and intussusceptions (3). The diagnosis was suggested by ultrasonography in majority of cases (70%) and x ray in the remainder.

Symptom	Number of patients	Percentage
Abdominal pain	100	35.71
Vomiting	65	23.21
Nutritional anemia	40	14.29
Constipation	20	7.14
Diarrhea	18	6.43
Worm bolus obstruction	17	6.07
Abdominal distension	10	3.57
Volvulus	7	2.5
Intussusception	3	1.07
Total	280	

Majority of patients were managed conservatively (270). Six patients underwent surgical exploration. Majority of patients were lost to follow up. Fifty patients turned up for assessment of clearance of ascariasis at 3 months follow up. Ten patients were found to be positive for round worm ova. They were given an extra dose of Albendazole.

**Discussion**

Ascaris is the largest intestinal nematode of humans with its natural habitat in the jejunum of humans. Toddlers and school-going children are more susceptible to ascariasis because of their tendency to mouthing and playing with soil which is the reservoir of eggs (infectious forms o the parasite). Inoculation of eggs can lead to massive infection in the host. This fact combined with the small diameter of intestinal

lumen in children and increased worm burden can lead to massive ascariasis and more incidence of worm obstruction. Boys are more exposed than girls because of greater risk to outdoor activities.<sup>7</sup> There are reports of trans-placental migration of ascaris larvae as well.<sup>8</sup> In addition to this, there is an increased prevalence of intestinal obstruction in the developing world.

Majority of infestations are asymptomatic. As such, these cases are not brought to medical attention. Symptomatic cases are largely due to heavy infestations with round worms. Such symptoms include abdominal pain, nausea, vomiting, nutritional deficiencies, surgical emergencies like obstruction and volvulus.<sup>9</sup> Obstruction commonly occurs in the age group of 1-5 years (85%). An enlarging and heterogeneous mass which changes in size and position in the abdomen may be seen.<sup>10</sup> Diagnosis was based on history of passage of worms either in stool or in vomitus. X ray or sonographic evidence of presence of worms in intestine was used as a marker to confirm diagnosis.<sup>11</sup> On plain films, worms gave the appearance of cigar bundle or radiolucent areas. Plain X ray films also suggested presence of features of intestinal obstruction due to worm bolus obstruction. On ultra sonography, various appearances of roundworms have been observed. Single or multiple bundles of worms described as an anechoic tube with multiple linear and long echogenic strips in the absence of acoustic shadows have been described.<sup>12 13</sup> Pseudo tumor like appearance has also been described.<sup>14</sup> Ascariasis related intestinal obstruction occurs due to following suggested pathological mechanisms:

- 1 Either a mass of worms forms a bolus and results in mechanical obstruction of intestinal lumen.
- 2 The worms can inhabit the ileo-caecal valve. Since the valve is the only exit point for intestinal contents into the large gut. This coupled with neurotoxin secretion can lead to small bowel contraction and obstruction.
- 3 Thirdly, the bolus of worms can be a lead point for occurrence of intussusception.<sup>15</sup>

We managed majority of patients conservatively with oral Albendazole in a dose of 200 mg for ages ranging between 12-23 months and 400 mg for children with age more than 24 months. Majority of patients responded to oral Albendazole. Even patients with documented evidence of intestinal obstruction have responded to conservative management in various case series and clinical studies.<sup>16</sup> In our study, however, majority of patients with surgical condition required exploration and did not respond to conservative management. Patients were advised at the time of discharge regarding safe disposal of

excreta, protection of food, adequate sanitization and hand hygiene practices.

### Conclusion

To conclude ascariasis is the commonest helminthic infection in humans leading to massive infestation especially in resource poor countries. Majority of patients are asymptomatic. Symptomatic cases are managed conservatively in a large proportion of cases. Very few percentages of patients require surgical intervention.

### References

1. Anderson RM, May RM: Population dynamics of human helminth infections: Control by chemotherapy. *Nature* 297:557, 1982
2. Botero D Epidemiology and public health importance of intestinal nematode infections in Latin America. *Prog Drug Res* 19:28, 1975
3. Anderson RM, Medley GF: Community control of helminth infections of man by mass and selective chemotherapy. *Parasitology* 90:629, 1985
4. Bundy DAP: Immunoepidemiology of intestinal helminthic infections: The global burden of intestinal nematode disease. *Trans R SOC Trop Med Hyg* 88:259, 1994
5. Baldwin M, Eisenman RE, Prelipp AM, et al: *Ascaris lumbricoides* resulting in acute cholecystitis and pancreatitis in the Midwest. *Am J Gastroenterol* 88:219, 1993
6. Croll NA. Anderson RM. Gvorkos TW, et al: The uouulation biology and control ',> of *Ascuris' lumbricoides* in'a k a l co&uni@ in Ira;. *kran R SOC Trop Med Hyg I-* 76:187, 1982
7. CromLton DWT Asc&iasis and childhood malnutrition. *Trins R Soc Trop Med Hyg I-* 86:57f, 1992
8. Crompton DWT, Nesheim MC, Pawlowski ZS (eds): *Ascariasis and its prevention and control*. London, Taylor & Francis, 1989
9. Gupta MC, Arora KL, Mithal S, et al: Effect of periodic deworming on nutritional status of Ascaris-infested preschool children receiving supplementary food. *Lancet* 2108, 1977

10. Khuroo MS, Dar MY, Yattoo GN, et al: Serial cholangiographic appearances in recurrent pyogenic cholangitis. *Gastrointest Endosc* 39:674, 1993
11. Khuroo MS, Zargar SA, Mahajan R, et al: Sonographic appearances in biliary ascariasis. *Gastroenterology* 93:267, 1987
12. Khuroo MS, Zargar SA, Yattoo GN, et al: Sonographic findings in gallbladder ascariasis. *J Clin Ultrasound* 20:587, 1992
13. Desai S, Tobin K: Biliary ascariasis: Sonographic findings. *AJR Am J Roentgenol* 164:767, 1995
14. Gutierrez Y: *Ascaridida-Ascaris, Lagochilascaris, Anisakis, Pseudoterranova and Baylisascaris.* In Gutierrez Y: *Diagnostic Pathology of Parasitic Infections with Clinical Correlations.* Philadelphia, Lea & Febiger, 1990, pp 236-247
15. Khuroo MS, Zargar SA, Yattoo GN, et al: Sonographic findings in gallbladder ascariasis. *J Clin Ultrasound* 20:587, 1992
16. Davis A: *Drug treatment in intestinal helminthiasis.* Geneva, World Health Organization, 1973.