



---

**CASE REPORT**

---

**A case of a four-year-old with helminthiasis complicated by intestinal obstruction and atrial trigeminy**

**Bosede Adebayo<sup>1</sup>, Taiwo Lawal<sup>2</sup>, Temitope Oni<sup>3</sup>, Regina Oladokun<sup>1\*</sup>**

<sup>1</sup>Department of Paediatrics, University of Ibadan and University College Hospital, Ibadan, Nigeria

<sup>2</sup>Department of Surgery, University of Ibadan and University College Hospital, Ibadan, Nigeria

<sup>3</sup>Department of Paediatrics, University College Hospital, Ibadan, Nigeria

\*Corresponding author: [ginaolad@gmail.com](mailto:ginaolad@gmail.com)

**How to cite this article:**

Adebayo B. Lawal T. Oni T. Oladokun R. A case of a four-year-old with helminthiasis complicated by intestinal obstruction and atrial trigeminy. *Journal of the African Society for Paediatric Infectious Diseases*. 2021; Volume 1:1-5. DOI: <https://doi.org/10.15641/jafspidVol1pp1-6/1659>

---

**Article Information**

Received: 16 August 2021

Accepted: 1 November 2021

**Key words**

*Helminthiasis; Ascariasis; Ascaris lumbricoides; intestinal obstruction; atrial trigeminy*

**Abstract**

*A child presented with a 4-day history of abdominal pain and distension, constipation, and bilious vomiting. The diagnosis of intestinal obstruction secondary to multiple worm boluses in the intestinal lumen was established during laparotomy. Intraoperatively, he suffered a cardiac arrest which was preceded by an episode of near-fatal arrhythmia. The arrhythmia was thought to be a complication of eosinophilic myocarditis which had hitherto not been widely documented in children with heavy worm infestation. As children bear a significant burden of helminthiasis, there is a need to intensify public deworming programme.*

## Background

*Ascaris Lumbricoides* is a common cause of parasitic infection in humans. More than one quarter of the world's population is affected.<sup>1</sup> In resource-limited countries, while malaria, respiratory tract infections, measles and diarrhoea are leading causes of morbidity and mortality, helminthiasis is a significant public health challenge, contributing to the morbidity experienced by children. Intestinal helminthiasis increases the risk of malnutrition, poor growth and heavy infestation.<sup>2</sup> Intestinal obstruction is a known complication of helminthiasis. *A. lumbricoides* has also been reported to produce a neurotoxin that causes spasticity, increasing the risk of intestinal obstruction.<sup>3</sup> There may also be parasite induced eosinophilia which is common in children<sup>1</sup>.

We describe a child with intestinal obstruction secondary to ascariasis who experienced cardiac problems possibly induced by eosinophilic myocarditis.

## Case report

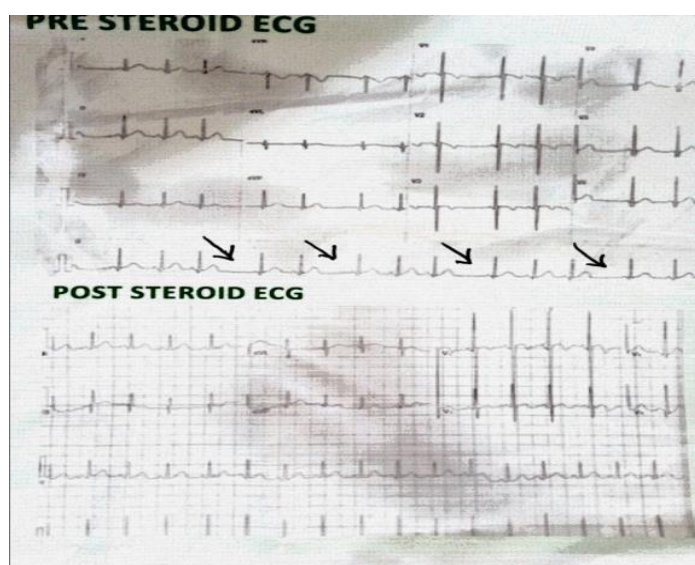
A 2-year-old boy presented to the children's emergency ward with a 4-day history of abdominal pain associated with constipation and bile-stained vomiting. He experienced increasing abdominal distention before presentation. The patient had passed roundworms per rectum two days before the illness began, for which the mother gave levamisole that had been purchased over the counter. The patient did not vomit worms at any time. At presentation, he was acutely ill, pale, and dehydrated. His pulse rate was 110/minute and regular. He had normal heart sounds. His abdomen was distended, a mass with an irregular surface was palpated in the suprapubic region and a digital rectal examination revealed an empty rectum. A diagnosis of mechanical intestinal obstruction secondary to possible helminthiasis was made. Plain abdominal radiographs showed dilated loops of bowel with multiple air-fluid levels. Full blood count showed a total white blood cell count of 5,290 cells/mm<sup>3</sup> (Neutrophils – 39%, Lymphocytes – 51% and Eosinophils - 6%. The haemoglobin concentration was 8.6g/dL, while the serum electrolytes and blood urea were within normal limits. The chest radiograph revealed no features of pneumonia or pneumonitis. Pre-operative echocardiography showed a structurally normal heart with good cardiac function. He had intravenous fluid hydration, nasogastric decompression, intravenous ceftriaxone, and metronidazole and was worked up for emergency exploratory laparotomy.

At surgery, distended loops of the small bowel and a single perforation of 1cm in diameter in the ileum located 60cm from the ileocaecal junction were present. Multiple worm boluses were present in the intestinal lumen at different segments between the duodenojejunal junction and the rectum. The bowel appeared relatively healthy-looking. The ascaris worms in the jejunum and ileum were milked distally and evacuated through the ileal perforation, and a sigmoidostomy was made to extricate the worms in the colon. The ascaris worms are shown in Figure 1.



**Figure 1:** Intestinal ascaris extracted at laparotomy

The ileal perforation and sigmoid colon incision were repaired, and the wound closed in layers. Intraoperatively, the patient had an episode of cardiac arrest associated with hypotension and was successfully resuscitated. He recovered fully from the anaesthesia and was transferred to the ward. In the immediate postoperative period, his pulse rate became regularly irregular, with heart rates ranging between 70 and 100/minute over the first 48 hours after surgery. ECG revealed sinus rhythm, heart rate of 83 beats per minute with P waves of normal morphology but there was atrial trigeminy, Figure 2. The QRS axis was  $+70^\circ$ , QRS complexes occurred in couplets. The dominant QRS wave in leads V1 and V2 was the S wave while in V5 and V6 was the R wave in keeping with LV dominance as expected for age and the T wave axis was  $32^\circ$  which were both normal for age. The atrial trigeminy resolved after the administration of IV Hydrocortisone. He was also treated with albendazole. He made satisfactory clinical progress, the wound healed satisfactorily, and he was discharged home six days post-surgery. At follow up, his heart rate was 120/minute with a regular rhythm.



**Figure 2:** ECG showing atrial trigeminy (arrows)

### Discussion

Intestinal obstruction caused by intestinal ascariasis is often diagnosed at laparotomy. It is recommended that in areas endemic for *A. lumbricoides*, any child manifesting acute abdominal symptoms consistent with intestinal obstruction or perforation should be evaluated for ascariasis.<sup>1</sup> Children between the ages of 3 and 5 years are more prone to obstruction because of the reduced internal diameter of their intestines and the ileocecal valve.<sup>3</sup> *A. lumbricoides* produces a neurotoxin that causes spasticity increasing the risk of obstruction.<sup>3,4</sup>

Complications of helminthiasis are not limited to intestinal obstruction. Others include eosinophilic pneumonia, anaemia, malnutrition, pancreatitis and cognitive impairment.<sup>5</sup> One of the rarely reported complications of helminthiasis is myocardial involvement. A few cases of myocarditis have been reported in adults.<sup>6</sup> The definitive diagnosis of ascariasis with myocardial involvement rests on evidence of parasite and of cardiac dysfunction. ECG findings may be non-specific with negative T-waves.<sup>7</sup> Myocarditis has rarely been reported in children. Possible causes of arrhythmia in this child include cardiac hypoxia occurring during the cardiac arrest, electrolyte derangement and myocarditis secondary to eosinophilia. In this report, the possibility of the arrhythmia being due to eosinophilic myocarditis is reviewed. Serum sodium, potassium, calcium, and glucose values were within normal limits.

Though, myocarditis in patients with ascariasis is usually associated with hypereosinophilia, it may be

absent in helminthic infections that are well contained within the tissues or are solely intraluminal within the intestinal tract.<sup>8</sup> Mild eosinophilia in this child who had solely intraluminal ascariasis may therefore not be an abnormal finding. There have also been similar reports in adults in whom eosinophilia was absent.<sup>6,9</sup> In the report by Sugiyama *et al*, eosinophilic myocarditis was supported by a myocardial biopsy.

With regards to prevention of the infestation, in areas of high prevalence, school deworming programmes may be beneficial in the short term but because of reinfection, which is inevitable in such settings, improved sanitation and sustained economic growth are most effective for parasite control in the long-term.<sup>1</sup> It is to be noted that most mass treatment strategies target school-aged children, though pre-school aged children have a similar infestation rate and burden compared to school-aged children.<sup>10</sup>

There is a need to intensify public deworming exercises in children since they bear a significant burden of helminthiasis. This case report highlights the need to broaden the deworming strategy to include preschool aged children as they are also prone to developing complications from heavy helminthic infestation.

**Author contributions:** All authors developed the concept and contributed to the writing of this case report

**Funding:** This project was unfunded

**Consenting statement:** The authors confirm that written informed consent was obtained from the patient's biological mother to publish the clinical information and images in this case report.

**Competing interests:** The authors declare no competing interests

## References

1. Harris JR, Hotez PJ. Intestinal Nematodes. In Long SS, Prober CG, Fischer M. eds. Principles and Practice of Pediatric Infectious Diseases. 5<sup>th</sup> ed. Philadelphia: Elsevier, 2017:1373-81.
2. Nematian J, Nematian E, Gholamrezanezhad A, Asgari AA (2004) Prevalence of intestinal parasitic infections and their relation with socio-economic factors and hygienic habits in Tehran primary school students. *Acta Trop* 92:179–186.
3. Andrade AM, Perez Y, Lopez C, et al. (2015) Intestinal Obstruction in a 3-Year-Old Girl by *Ascaris lumbricoides* Infestation: Case Report and Review of the Literature. *Medicine (Baltimore)* 94:e655.
4. Villamizar E, Mendez M, Bonilla E, Varon H, De Onatra S (1996) *Ascaris lumbricoides* infestation as a cause of intestinal obstruction in children: Experience with 87 cases. In: *J. Pediatr. Surg.* pp 201–205.
5. Al Amin ASM, Wadhwa R (2020) Helminthiasis. StatPearls Publishing, Treasure Island (FL), Bangabandhu Sheikh Mujib Medical University.
6. Sugiyama E, Takenaka T, Kato M, et al, Hasebe N (2015) Eosinophilic myocarditis without hypereosinophilia accompanied by giant cell infiltration. *J Cardiol Cases* 12:169– 171.
7. Albakari A. Parasitic (Helminthic) cardiomyopathy: A review and pooled analysis of pathophysiology, diagnosis and clinical management. *Med Clin Arch* 2019;3: DOI: 10.15761/MCA.1000153.
8. Rich RR, Fleishner TA, Shearer WT, Schroeder A, Frew A. *Clinical Immunology, Principles and Practice* (2013).
9. Sohn IS, Park JC, Chung JH, Kim KH, Ahn Y, Jeong MH, Cho JG (2006) A case of acute eosinophilic myopericarditis presenting with cardiogenic shock and normal peripheral eosinophil count. *Korean J Intern Med* 21:136–140.
10. Davis SM, Worrell CM, Wiegand RE, et al. Soil-transmitted helminths in pre-school-aged and school-aged children in an urban slum: A cross-sectional study of prevalence, distribution, and associated exposures. *Am J Trop Med Hyg* 2014; 91:1002–1010.

The *Journal of the African Society for Paediatric Infectious Diseases Society* (JAfSPID) is a free, open-access, online journal. *JAfSPID* publishes a wide variety of manuscripts including full-length research articles, short research communications, review articles, commentaries, case reports, medical images, conference reports, short commentaries on a published landmark paper or report, letters to the editor and invited editorials on all aspects of infectious diseases in neonates, children, and adolescents. Contributions are reviewed by one editor. In addition, all research manuscripts, review articles, commentaries, case reports, medical images and conference reports are subjected to double-blind peer-review by at least one external, independent referee.