



Intestinal obstruction due to ascariasis A case report.

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Abstract

Introduction: Parasitic infection caused by *Ascaris lumbricoides* is the most common infection in the world; approximately one-quarter of the world's population is infected. This is most common in rural areas where health infrastructure is deficient, where it is associated with increased morbidity at the pediatric age.

Case: Among the main complications of this pathology is intestinal obstruction, which can lead to surgical resolution.

Conclusions: This article describes the clinical report of a pediatric patient who was diagnosed with acute abdomen due to probable appendicitis. After its approach and management, the definitive diagnosis was an intestinal obstruction caused by ascariasis, requiring surgical treatment in addition to antiparasitic therapy.

Keywords:

DeCS: *Ascaris lumbricoides*, parasitosis, intestinal obstruction.

Abbreviations

CRP: C-reactive protein.

Supplementary information

No supplementary materials are declared.

Acknowledgments

Not declared.

Author contributions

Evelyn Ordóñez González: Conceptualization, data curation, formal analysis, funding acquisition, research, writing - original draft.

Isabel María Salcedo Velarde: Conceptualization, data curation, formal analysis, data analysis, writing and corrections.

Manuel Cabrera Viteri: Research, writing – original draft.

All the authors read and approved the final version of the manuscript.

Financing

The authors of this article financed the expenses of this research. Treatment and procedures are a regular part of the pediatric service, so they do not constitute an additional cost for patients.

Availability of data and materials

Not declared.

Introduction

Ascaris lumbricoides is an intestinal nematode that produces one of the most common helminth parasites worldwide, mainly on the Asian, African, and South American continents. [1]. Its transmission occurs through ingestion of water or food contaminated with roundworm eggs, and symptoms can occur during the late-stage adult worm or early-stage larval migration. The diagnosis is based on imaging findings of the parasite, peripheral eosinophilia, and epidemiological exposure to parasite eggs, thus requiring treatment through anthelmintic therapy. These patients may also present complications such as intestinal obstruction, hepatobiliary involvement, pancreatitis, and malnutrition [2]. Ascariasis is the most common cause of acute abdominal surgical emergencies that occur in children between 1 and 5 years of age and require surgical and antiparasitic treatment [3].

Clinical case

The clinical case of a 2-year-old, 6-month-old male patient who lives in the rural area of Guayaquil is presented. A 24-hour clinical picture characterized by crampy abdominal pain located in the right iliac fossa was accompanied by an unquantified thermal increase and vomiting of food content on 2 occasions. This patient was considered to have acute abdomen due to probable appendicitis. She was admitted to the Emergency Department with dehydration data. Similarly, biometrics were used to draw attention to leukocytosis ($23.59 \times 10^9/L$), predominantly to neutrophils (81%), anemia (with a hemoglobin of 10 gr/dl), hematocrit (31.8%), reactive thrombocytosis (592000 uL), elevated acute phase reactant (CRP) (21.4 mg/L), imaging studies with abdominal X-ray showing air-fluid levels, and loop distension predominantly in the central intestinal tract, with tubular images that could correspond to volvulus due to obstruction by lumbricoid ascaris and abdominal ultrasound with a report of distended intestinal loops with internal loop fluid, within which tubular images were observed with movements as seen in parasitosis (*ascaris*). and mesenteric nodes of 8 mm.

Fasting, intravenous analgesia, and evaluation by the Pediatric Surgery Service were prescribed in the presence of intestinal obstruction with a parasitic cause, indicating that diagnostic laparoscopy was warranted with the probability of laparotomy to carry out ascaris ball removal.

Finally, an exploratory laparotomy was performed with intestinal resection, intestinal anastomosis, and taxiing to remove the lumbricoid ascaris ball from the intestinal lumen, washing, and drainage in the abdominal cavity. The following findings were obtained: obstruction by a ball of lumbricoid ascaris 15 cm from the ileocecal valve that causes intestinal volvulus with necrosis of 20 cm of the intestinal loops; *Ascaris* tangles at the level of the Treitz angle; proximal jejunum, duodenum and descending colon; and purulent fluid in the cavity 100 ml.

Figure 1. Abdominal X-ray revealed air-fluid levels and distension of the intestinal loops.



Figure 2 Abdominal ultrasound: Tubular images with movements such as parasitosis are observed.



Figure 3. Zone of necrosis in intestinal loops.**Figure 4. Ascaris lumbricoides tangle.**

He moved to a critical area for postsurgical management, presenting a positive transsurgical balance, with bleeding of approximately 481 cc, where he needed oxygen support through a nasal cannula for 48 hours and dynamic management of intravenous fluids. In his first postsurgical hours, crystalloid loads up to 40 cc/kg and fluids at a flow rate and half of their basal requirements, analgesia, fasting with gastric protection, and triple antimicrobial regimen were applied.

At 72 hours postsurgery, he went to the hospitalization room and fasted for a total of 5 days, after which he resumed her diet and was able to receive antiparasitic treatment via

piperazine for 3 days. On the 6th day after surgical management, an abdominal ultrasound of the control subject without pathological findings was performed, and the drain was removed; 12 days later, antibiotic therapy based on ceftriaxone, metronidazole, and ten days of amikacin was administered.

Before discharge, control laboratory tests were performed for patients with decreased leukocyte and platelet counts and negative PCR results.

A small intestine biopsy revealed transmural infarction and acute and chronic inflammatory processes in the intestinal wall secondary to intestinal volvulus.

Discussion

Ascariasis is a global health problem that is considered among the ten most common intestinal parasitic infections and is predominant in Asian, African, and South American countries. A low socioeconomic environment, overcrowding, shortages of drinking water, and poor hygiene conditions are the main risk factors [2, 4, 5].

This parasitaemia produces an asymptomatic infection, where its clinical presentation will depend on the degree of obstruction, the evolution of which will be acute or subacute, requiring medical or surgical treatment [5, 6, 7].

The main clinical manifestations include abdominal pain, bloating, fever, and sometimes the expulsion of the ascaris through the rectum or mouth. In cases of intestinal obstruction, the clinical picture is abrupt due to partial or total intestinal occlusion caused by the formation of an intraluminal tangle of helminths [8, 9].

Complementary studies have reported peripheral eosinophilia in 5 to 12% of patients in the early symptomatic period. Simple abdominal radiography can reveal the accumulation of adult *Ascaris*, which can cause the formation of a ball, and ultrasound may reveal echogenic intestinal tubular structures; moreover, at the direct examination of feces, the presence of roundworm eggs can occur [2, 8].

Treatment for this parasitic infection relies on anthelmintic therapy involving the use of benzimidazoles and derivatives (albendazole and mebendazole), which can cause the death of the parasite, and the use of piperazine, which can cause flaccid paralysis of the helminth. While conservative management of complications such as intestinal obstruction can be used, a nasogastric tube can be used, and fluid replacement can be used; in the case of complete obstruction without an excellent response to the regimen, surgical resolution is needed to perform an emergency exploratory laparotomy in the presence of an acute abdomen [9, 10, 11].

We consider this clinical case to be interesting because it involves a preschooler who was treated for acute abdomen with a first diagnostic impression of appendicitis. However, with a history of living in a rural area where hygienic conditions were probably not adequate, as well as the imaging findings of the roundworm ball that produced an intestinal

obstruction, where it was necessary to perform an exploratory laparotomy as part of the pertinent treatment.

Conclusions

Ascariasis is one of the most common parasitic infections in children worldwide and can lead to complications such as intestinal obstruction and require immediate surgical management. This case report is based on the importance of timely diagnosis and treatment of the pathology, which led to a satisfactory result and good clinical outcome.

References

1. Ascariasis: an infection not to forget. (s/f). Pap.es. Retrieved on July 19, 2023, from <https://pap.es/articulo/13603/ascaridiasis-una-incción-para-no-olvidar>
2. Barros, P., Martínez, B. and Romero, J. (2023) Intestinal Parasitosis - Spanish Association of Pediatrics, <https://www.aeped.es/>. Available at: https://www.aeped.es/sites/default/files/documentos/11_parasitosis.pdf (Accessed: 31 July 2023).
3. Zúñiga, MFS, Vásquez, LR, Mamián, AM, Jiménez, FJS, Timaná - Imbachi, FJ, Arcos, TAR, Ortega-Delgado, DA, Belalcázar-Hernández, GL, Orozco, HM, & Narváez, TC (2020). Intestinal ascariasis. Three pediatric cases with severe complications in Cauca, Colombia. *Medicine and Laboratory*. <https://doi.org/10.36384/01232576.213>
4. Guerra-Macías I, Martínez-Sariol E, García-Céspedes M, Suárez-Guerra J, Suárez-Guerra J. Complicated ascariasis in an infant. *Cuban Journal of Pediatrics [online magazine]*. 2021 [cited 2023 Dec 11]; 93(3):[approx. 0 p.]. Available at: <https://revpediatria.sld.cu/index.php/ped/articulo/view/1160>
5. Ramírez-Rivera, JI, Leiva-Flores, JR, & Mielles-Figueroa, JM (2018). Intestinal obstruction due to ascariasis in a 6-year-old child. Report of a case. *Salud Uninorte*, 34(3), 819–823. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-55522018000300819
6. Sulmiati, Nurmantu F, Ahmadwirawan, Mariana N, Habar TR, Faruk M. Acute intestinal obstruction due to ascariasis in a child: A case report. *Int J Surg Case Rep*. 2023 Mar;104:107923. doi : [10.1016/j.ijscr.2023.107923](https://doi.org/10.1016/j.ijscr.2023.107923) . Epub 2023 Feb 11. PMID: 36791528; PMCID: PMC9950956.
7. Fata, C., Naeem, F., & Barthel, E.R. (2019). Small bowel obstruction secondary to *Ascaris lumbricoides* in the setting of prior exploratory laparotomy. *Journal of Pediatric Surgery Case Reports*, 47(101254), 101254. <https://doi.org/10.1016/j.epsc.2019.101254>
8. Moscatelli, Guillermo, Orbe, Guido, Etchepareborda, Noiana, & Altcheh, Jaime. (2015). Intestinal ascariasis. *Argentine Pediatric Archives*, 113(1), 88-89. <https://dx.doi.org/10.5546/aap.2015.88>
9. Alvarez-Solís, RM, Lucatero, SG-, Vargas-Vallejo, M., Quero-Hernández, A., Bulnes-Mendizabal, D., & Hernández-Sierra, JF (2011). Clinical differences between intestinal occlusion and subocclusion by *Ascaris lumbricoides*. Data that guide surgical treatment. *Acta Pediátrica de México*, 32(3), 156–162. <https://www.medigraphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=30605>
10. Hefny AF, Saadeldin YA, Abu-Zidan FM. Management algorithm for intestinal obstruction due to ascariasis: a case report and review of the literature. *Ulus Travma Acil Cerrahi Derg*. 2009 May;15(3):301-5. PMID: 19562557. Kawasaki T. Kawasaki disease. *Int J Rheum Dis*. 2014 Jun;17(5):597-600. doi: [10.1111/1756-185X.12408](https://doi.org/10.1111/1756-185X.12408) . PMID: 25042617.
11. Soomro MA, Akhtar J. Nonoperative management of intestinal obstruction due to ascariasis lumbricoides. *J Coll Physicians Surg Pak*. 2003 Feb;13(2):86-9. PMID: 12685950. Tan W, Jing L, Wang Y, Li W. A global bibliometric analysis on Kawasaki disease research over the last 5 years (2017-2021). *Front Public Health*. 2023 Jan 10;10:1075659. doi: [10.3389/fpubh.2022.1075659](https://doi.org/10.3389/fpubh.2022.1075659) . PMID: 36703854; PMCID: PMC9871775.
12. Coello Kuon Yeng, L., & Rey Guevara, R. (2019). Ascariasis: Update on an Endemic Parasitosis. *Scientific Magazine Hallazgos21*, 4(1), 87-99. Recovered from <http://revistas.pucese.edu.ec/hallazgos21/>
13. Pérez-Mayo, A., Castillo-Catalá, D., & Ricardo-Serrano, B. (2022). Intestinal volvulus perforated by *Ascaris lumbricoides* in a pediatric patient. *Electronic Magazine Dr. Zoilo E. Marinello Vidaurreta*, 47(3), e3039. Retrieved from

<https://revzoilomarinello.sld.cu/index.php/zmv/article/view/3039>

14. World Health Organization. Soil-transmitted helminth infections: updating the global picture [online]. World Health Organization, 2020 [cited 08 August 2023]. Available at: <https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections>.
15. Llorente Pelayo, Sandra, Ramírez Berrios, Jesús, Carabaño Aguado, Iván, Liébana de Rojas, Constanza, Fernández Cooke, Elisa, Salcedo Lobato, Enrique, & Medina Benítez, Enrique. (2020). Mysterious gastric dilation. *Pediatrics Primary Care*, 22(85), 67-71. Epub August 3, 2020. Retrieved on August 8, 2023, from http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1139-76322020000100016&lng=es&tlng=es.
16. Jourdan, P.M., Lamberton, P.H.L., Fenwick, A., & Addiss, D.G. (2018). Soil-transmitted helminth infections. *Lancet (London, England)*, 391(10117), 252–265. [https://doi.org/10.1016/S0140-6736\(17\)31930-X](https://doi.org/10.1016/S0140-6736(17)31930-X)

Editor's Note

Actas Médicas (Ecuador) remains neutral with respect to jurisdictional claims in published maps and institutional affiliations.

Received: September 19, 2023.

Accepted: December 2, 2023.

Published: December 12, 2023.

Editor: Dr. Mayra Ordoñez Martínez.

Cite:

Ordóñez E, Salcedo I, Cabrera M. Intestinal obstruction due to ascariasis. *Actas Médicas (Ecuador)* 2023;33 (1):150-154.



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Statements

Ethics committee approval and consent to participate

The authors obtained consent for participation in the present study from the patients' guardians.

Publication consent

Written permission was obtained from the patient's parents for the publication of the images.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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