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CASE REPORT

Complex intestinal ascariasis with secondary peritoneal obstruction and irritation: a case report

Ascariasis intestinal complejizada con obstrucción e irritación peritoneal secundarias: a propósito de un caso

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ABSTRACT

Roundworm (Ascaris lumbricoides) is a nematode known in Latin America as the roundworm. It belongs to the group of parasites transmitted through contact with contaminated soil and is the most common helminthiasis worldwide, especially in children aged 2 to 10 years. In Paraguay, the prevalence of intestinal parasitosis in school-aged children is high, mainly due to poor sanitary conditions and adverse socioeconomic factors. In this context, we present the case of a 3-year-old female patient, a resident of a rural area, who presented with severe abdominal pain, vomiting, fever, and abdominal distension. The physical examination revealed signs of peritoneal irritation, and stool examination confirmed the presence of Ascaris lumbricoides eggs. Imaging studies showed intestinal obstruction and abundant worms in the small intestine. Due to the severity of the condition, emergency surgery was performed, removing the parasites and performing peritoneal lavage. The patient made a favorable outcome after treatment. This case highlights the importance of timely diagnosis and comprehensive management of ascariasis complications, as well as the need to strengthen prevention strategies, health education, and access to treatment in vulnerable communities to reduce the incidence and complications associated with this parasitic infection.

Keywords: Roundworm Lumbricoides; Ascariasis; Parasitic Infection.

RESUMEN

El áscaris lumbricoides es un nematodo conocido en Latinoamérica como lombriz intestinal. Integra al grupo de parásitos transmitidos por contacto con suelo contaminado y es la helmintiasis más frecuente en todo el mundo, especialmente en niños de 2 a 10 años. En Paraguay, la prevalencia de parasitosis intestinales en niños de edad escolar es alta, principalmente debido a condiciones sanitarias deficientes y factores socioeconómicos adversos. En este contexto, se presenta el caso de una paciente femenina de 3 años, residente en una zona rural, que acudió con dolor abdominal severo, vómitos, fiebre y distensión abdominal. El examen físico reveló signos de irritación peritoneal y el coproparasitológico confirmó la presencia de huevos de Áscaris lumbricoides. Estudios de imagen mostraron obstrucción intestinal y abundantes lombrices en el intestino delgado. Debido a la gravedad del cuadro, se realizó una intervención quirúrgica urgente, extrayéndose los parásitos y efectuando lavado peritoneal. La paciente evolucionó favorablemente tras el tratamiento. Este caso resalta la importancia del diagnóstico oportuno y el manejo integral de las complicaciones de la ascariasis, así como la necesidad de fortalecer las estrategias de prevención, educación sanitaria y acceso a tratamientos en comunidades vulnerables para reducir la incidencia y las complicaciones asociadas a esta parasitosis.

Palabras clave: Áscaris Lumbricoides; Ascariasis; Parasitosis.

INTRODUCTION

Ascariasis is the most common intestinal helminthiasis worldwide. Although it is found in all countries, it is more prevalent in tropical and subtropical areas with poor sanitation. Although it infects adults, it is more common in children aged 2 to 10 years and decreases in older age groups.[1]

Ascaris lumbricoides is a nematode known in Latin America as the intestinal worm. It belongs to the group of parasites that are transmitted through contact with contaminated soil.[2]

Ascaris lumbricoides is the main species that causes human infections worldwide. It is important to analyze its life cycle to better understand the transmission and complications that this parasite can cause.[3]

First, adults live in the lumen of the small intestine. The female is capable of producing almost 200,000 eggs per day, which are then eliminated in the feces. Unfertilized eggs can be ingested but are not infectious. For the larvae to develop inside fertile eggs, they need approximately 18 days and must be in specific environmental conditions: moist, warm, and shaded soil.[4]

After the infectious eggs are ingested, the larvae hatch, first invading the intestinal mucosa and then reaching the lungs through the bloodstream, where they mature for 10 to 14 days. They then penetrate the alveolar walls and ascend through the bronchial tree to the throat, where they are swallowed. It is in the small intestine where they mature into adults, which live for 1 to 2 years.[5]

The patient reports abdominal pain that was initially diffuse and soon became localized, probably due to a larger parasite load. Although she did not present with Loffler's syndrome, she does have the digestive disorders typical of a parasitic infection. We can consider the possibility that the number of parasites has increased, as she has had symptoms of diarrhea throughout the year. The location of the pain indicates migration of the parasite to the appendix, and the distension suggests possible intestinal obstruction due to inflammation of this organ.[6]

There are several main factors that cause intestinal obstruction; multiple worms can form an intestinal bolus that causes mechanical obstruction in the intestinal lumen, which is the most common cause. Ascaris worms can inhabit the ileocecal valve, where the parasite's production of neurotoxins can cause intestinal contraction.[7]

Ascaris lumbricoides induces a strong humoral response that causes the production of allergenic immunoglobulins such as specific IgE, ABA-1 protein, tropomyosin, and glutathione transferase, which may cross-react with environmental allergens that modify the response to parasitic infection. It has been noted that the IgA response is related to decreased female fertility.[8]

The molecular mimicry of Ascaris lumbricoides has also been described, in which the larvae, when in contact with erythrocytes, absorb P1 epitopes from them so as not to trigger an immediate response mechanism to infection, since when the parasite shares molecular structures with the host cell, it does not induce the activation of T and/or B lymphocytes, or does so inefficiently.[9]

Ascariasis peritonitis, on the other hand, consists of adhesive inflammation, with multiple adenopathies and the presence of parasite eggs.[10]

Nationwide, there have been reports of a high prevalence of parasitic infections in school-age children, mainly caused by poor sanitary conditions in different regions of the country, which is a major factor influencing the high rate of parasitism. Poor economic conditions and poor sanitary infrastructure complement each other and make parasitic infections a very important problem from a social health perspective.[11]

CASE REPORT

The clinical case describes a 3-year-old female patient who came to the clinic with her mother complaining of severe abdominal pain, vomiting, and abdominal distension. The girl was born at term by uncomplicated vaginal delivery. Her psychomotor development has been adequate, although she has had several episodes of diarrhea in the last year, without a specific diagnosis. Recently, the girl has had several episodes of fever and loss of appetite. She lives with her parents and two siblings in a rural home in Itapúa, an area where access to drinking water is limited and sanitary conditions are poor.

The patient's mother reports that four days ago the girl began to experience abdominal pain, initially diffuse but later localized in the lower right quadrant. The pain has progressively increased in intensity and frequency and has been accompanied by recurrent vomiting (up to five times a day), without blood or bile. The girl has also had a high fever (39°C) and general malaise. The pain has worsened over the last 24 hours, with noticeable abdominal distension and total refusal to eat. The mother also mentions that she has observed the presence of worms visible to the naked eye in the girl's stools on at least three occasions in the last few days. The patient has no history of serious infections, but it is known that intestinal parasitic infections, especially ascariasis, are prevalent in the community.

On physical examination, the girl is in a state of severe general discomfort, with signs of irritability and crying due to abdominal pain. She is tired but conscious and alert, blood pressure: 85/50 mmHg, heart rate: 125 beats per minute, respiratory rate: 24 breaths per minute, temperature: 39,2°C, oxygen saturation: 98%

in ambient air, distended abdomen, especially in the lower right quadrant, with pain on palpation, positive Blumberg's sign, muscle guarding present in the right iliac fossa, suggesting possible peritonitis or intestinal perforation.

Skin pale, slightly sweaty, no signs of severe dehydration, eyes: conjunctiva slightly pale, no jaundice. Fontanelles normal, no signs of intracranial hypertension. Respiratory auscultation normal, no rales or wheezing. Heart sounds regular, no murmurs.

Blood count results show leukocytosis (13 000/mm^3) due to eosinophils (14 %), with all other values within normal reference ranges. Coproparasitological examination reveals the presence of Ascaris lumbricoides eggs in the stool sample. The abdominal X-ray (standing and recumbent) shows air-fluid levels and dilation of the small intestines, suggesting intestinal obstruction. The X-ray also shows the possible presence of parasite "migration" in the intestinal tract. Abdominal ultrasound confirms the presence of abundant Ascaris lumbricoides worms in the small intestine, partially obstructing the intestinal lumen. No perforations are observed, but there are signs of peritoneal irritation.

Given the diagnosis of severe intestinal obstruction due to Ascaris lumbricides and the presence of significant peritoneal irritation, the medical team decides on urgent surgical exploration. The intervention is performed through exploratory open surgery, in which the presence of Ascaris lumbricoides worms is observed to have caused a proximal intestinal obstruction in the small intestine, with signs of inflammation and peritoneal irritation. The parasites were carefully removed and a peritoneal lavage was performed to reduce the risk of infection. A thorough examination of the intestinal tract was performed to ensure there were no perforations, and the incisions were closed.

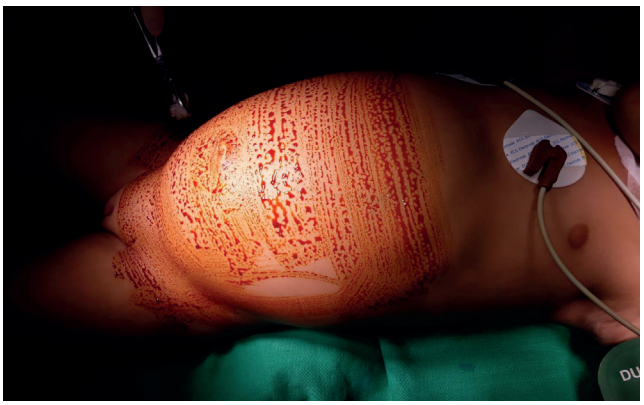

Figure 1. Significant abdominal distension observed in the girl prior to surgery

Figure 2. Presence of Ascaris lumbricoides in the distended small intestine

DISCUSSION

The case of this patient, a 3-year-old girl from a rural area of Paraguay, highlights the serious complications associated with intestinal ascariasis in settings with limited access to health services. Ascariasis, caused by Ascaris lumbricoides, is a highly prevalent parasitic infection in rural areas where access to drinking water and hygiene conditions are inadequate. In this context, the girl presented with a clinical picture characterized by

progressive abdominal pain, recurrent vomiting, fever, abdominal distension, and signs of peritoneal irritation, suggesting a possible serious complication such as intestinal obstruction.[12,13]

The clinical history, which included recurrent diarrhea of undiagnosed origin, together with unfavorable living conditions, reinforced the suspicion of an underlying parasitic infection. The finding of visible worms in the stool, reported by the mother, is characteristic of advanced stages of Ascaris lumbricoides infection. Physical examination revealed signs of peritoneal irritation, such as a positive Blumberg sign and muscle guarding, raising concerns about the possibility of serious complications such as peritonitis or intestinal perforation.[14]

Complementary studies were essential for diagnosis and treatment. Stool analysis confirmed the presence of Ascaris lumbricoides in the stool. Abdominal radiography and ultrasound showed evidence of intestinal obstruction, as well as the presence of parasites in the intestinal lumen. The complete blood count revealed significant eosinophilia, characteristic of parasitic infections, and leukocytosis, suggesting inflammation or secondary infection.[12,15]

Given that conservative management was not an option due to the severity of the intestinal obstruction, surgical intervention was chosen. Surgery confirmed the obstruction due to the presence of abundant Ascaris lumbricoides worms. During surgery, peritoneal lavage was performed, which helped prevent serious secondary infections. This procedure underscores the importance of a multidisciplinary approach in the treatment of complex cases, addressing both the surgical emergency and the underlying parasitosis.[13,14]

From a public health perspective, this case highlights the urgent need to implement preventive strategies in rural communities, such as mass deworming programs, education on hygiene practices, and improvement of basic sanitary conditions. These measures could significantly reduce the incidence of ascariasis and other associated parasitic diseases.[15]

CONCLUSION

The girl presented with a severe complication of intestinal ascariasis, characterized by intestinal obstruction and signs of peritoneal irritation, which required surgical intervention. This case reflects the consequences of untreated parasitic infections in vulnerable populations. The patient's favorable recovery after treatment highlights the importance of timely diagnosis and a comprehensive therapeutic approach. In the long term, the prevention and control of parasitic diseases in rural areas should include education campaigns, access to antiparasitic treatments, and improvements in sanitary conditions to prevent recurrences and similar complications.

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CONFLICT OF INTEREST

None.

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