

Diagnosis of *Ascaris lumbricoides* infection using capsule endoscopy

Eduardo Tomohissa Yamashita, Wagner Takahashi, Daniel Yuiti Kuwashima, Tiago Ribeiro Langoni, Adriana Costa-Genzini

Eduardo Tomohissa Yamashita, Wagner Takahashi, Daniel Yuiti Kuwashima, Tiago Ribeiro Langoni, Adriana Costa-Genzini, Advanced Center of Diagnostic and Therapeutic Endoscopy, UNIMED Santa Helena Hospital, 01508-000 São Paulo, Brazil

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Correspondence to: Eduardo Tomohissa Yamashita, MD, Advanced Center of Diagnostic and Therapeutic Endoscopy, UNIMED Santa Helena Hospital, Rua São Joaquim, 36 - 2º andar do Centro Médico, Liberdade, 01508-000 São Paulo, Brazil. edutomo@gmail.com

Telephone: +55-11-30917978 Fax: +55-11-38138587

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for *A. lumbricoides* infection, especially when other diagnostic methods have failed to detect the parasite. We report a case of *A. lumbricoides* infection that resulted in intestinal obstruction at the level of the ileum. Both stool sample examination and open surgery failed to indicate the presence of *A. lumbricoides*, and the cause of the obstruction was only revealed by capsule endoscopy. The patient was treated with anthelmintics.

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Key words: Capsule endoscopy; *Ascaris lumbricoides*; Intestinal obstruction

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Abstract

Ascaris lumbricoides (*A. lumbricoides*) is the most common intestinal roundworm parasite, infecting approximately one quarter of the world's population. Infection can lead to various complications because it can spread along the gastrointestinal tract. Although *A. lumbricoides* infection is a serious healthcare issue in developing countries, it now also has a worldwide distribution as a result of increased immigration and travel. Intestinal obstruction is the most common complication of *A. lumbricoides* infection, potentially leading to even more serious consequences such as small bowel perforation and peritonitis. Diagnosis is based primarily on stool samples and the patient's history. Early diagnosis, aided in part by knowledge of the local prevalence, can result in early treatment, thereby preventing surgical complications associated with intestinal obstruction. Further, delay in diagnosis may have fatal consequences. Capsule endoscopy can serve as a crucial, non-invasive diagnostic tool

INTRODUCTION

Ascaris lumbricoides (*A. lumbricoides*) has a worldwide distribution, but occurs most frequently in underdeveloped regions where sanitation is poor^[1,2]. In most cases the infection remains asymptomatic until the number of worms in the intestines increases considerably. It can cause serious complications, the most common of which is intestinal obstruction, although pancreatitis, cholangitis, bleeding, and obstructive jaundice can also occur^[3,4]. The diagnosis of *A. lumbricoides* infection is based mainly on patient history and stool samples, but complementary exams such as abdominal radiography and computed tomography can also aid in the diagnosis^[5]. We report a case of *A. lumbricoides* infection that resulted in intestinal obstruction. Although the obstruction was apparent during open surgery and imaging, neither they, nor the stool

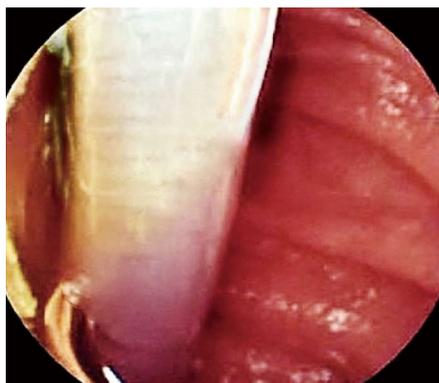


Figure 1 *Ascaris lumbricoides* roundworm physically blocking the small bowel.

samples analysis revealed the presence of *A. lumbricoides*. The presence of this parasite was however determined by video capsule endoscopy.

CASE REPORT

A 64-year-old Brazilian woman presented with abdominal discomfort and intermittent subocclusive episodes that had developed over the previous few weeks. The discomfort was relieved by evacuation. Physical examination indicated good health, and no abdominal tenderness was noted. The patient had undergone 2 previous exploratory laparoscopy procedures to examine the subocclusion, but the findings were normal. A stool sample was analyzed to detect the possible presence of a parasitic infection, but the findings were negative. However, contrast radiography and computed tomography revealed a partial obstruction with an undetermined tube-like structure at the level of the ileum, suggesting a parasitic infection. Capsule endoscopy (MiroCam capsule; Intromedic, Seoul, South Korea) was performed to determine the cause of the obstruction. A diagnosis of roundworm infection with partial obstruction of the ileum with live *A. lumbricoides* was confirmed (Figures 1 and 2). The first roundworm was seen 1 h 34 min after capsule ingestion (Figure 1) and the last one was seen 2 h later (Figure 2). Treatment with albendazole and piperazine was initiated, and the patient made a full recovery.

DISCUSSION

A. lumbricoides is the most common intestinal helminth parasite, infecting approximately one quarter of the world's population^[6]. It has long been endemic in devel-



Figure 2 Infection of the ileum with live *Ascaris lumbricoides*.

oping countries, but it now has a worldwide distribution due to the increase in immigration and travel^[7]. Capsule endoscopy is an important tool for evaluation of small bowel disorders, allowing for non-invasive diagnosis of many diseases. In this case, it was used successfully to reveal the cause of intestinal obstruction as being due to *A. lumbricoides* infection. This was after stool sample analysis and open surgery, which are currently considered to be the gold standard for *A. lumbricoides*.

REFERENCES

- 1 **Cooper PJ**, Chico ME, Sandoval C, Espinel I, Guevara A, Kennedy MW, Urban Jr JF, Griffin GE, Nutman TB. Human infection with *Ascaris lumbricoides* is associated with a polarized cytokine response. *J Infect Dis* 2000; **182**: 1207-1213 [PMID: 10979919 DOI: 10.1086/315830]
- 2 **Ziegelbauer K**, Speich B, Mäusezahl D, Bos R, Keiser J, Utzinger J. Effect of sanitation on soil-transmitted helminth infection: systematic review and meta-analysis. *PLoS Med* 2012; **9**: e1001162 [PMID: 22291577 DOI: 10.1371/journal.pmed.1001162]
- 3 **Akgun Y**. Intestinal obstruction caused by *Ascaris lumbricoides*. *Dis Colon Rectum* 1996; **39**: 1159-1163 [PMID: 8831534 DOI: 10.1007/BF02081419]
- 4 **de Silva NR**, Guyatt HL, Bundy DA. Morbidity and mortality due to *Ascaris*-induced intestinal obstruction. *Trans R Soc Trop Med Hyg* 1997; **91**: 31-36 [PMID: 9093623 DOI: 10.1016/S0035-9203(97)90384-9]
- 5 **Reeder MM**. The radiological and ultrasound evaluation of ascariasis of the gastrointestinal, biliary, and respiratory tracts. *Semin Roentgenol* 1998; **33**: 57-78 [PMID: 9516689 DOI: 10.1016/S0037-198X(98)80031-X]
- 6 **Zheng PP**, Wang BY, Wang F, Ao R, Wang Y. Esophageal space-occupying lesion caused by *Ascaris lumbricoides*. *World J Gastroenterol* 2012; **18**: 1552-1554 [PMID: 22509089 DOI: 10.3748/wjg.v18.i13.1552]
- 7 **Masucci L**, Graffeo R, Bani S, Bugli F, Boccia S, Nicolotti N, Fiori B, Fadda G, Spanu T. Intestinal parasites isolated in a large teaching hospital, Italy, 1 May 2006 to 31 December 2008. *Euro Surveill* 2011; **16**: 19891 [PMID: 21699767]

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