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**Ileal intussusception due to a parasit egg: A case report**

Pinto JP *et al.* Egg parasite-Case of intussuscepcion of the small intestine

José Pedro Pinto, Agostinho Cordeiro, Ana Margarida Ferreira, Conceição Antunes, Patrícia Botelho, Ana João Rodrigues, Pedro Leão

**José Pedro Pinto, Agostinho Cordeiro, Conceição Antunes, Patrícia Botelho, Pedro Leão,** Department ofGeneral Surgery, Serviço de Cirurgia Geral, Hospital de Braga, 2242 Apartado, Portugal

**Ana Margarida Ferreira,** Serviço de Anatomia Patológica, Hospital de Braga, 2242 Apartado, Portugal

**Pedro Leão, Ana João Rodrigues,** Life and Health Sciences Research Institute (ICVS), School of Health Sciences, University of Minho, Braga, 2242 Apartado, Portugal

**Pedro Leão, Ana João Rodrigues,** ICVS/3B’s-PT Government Associate Laboratory, Braga/Guimarães, 2242 Apartado, Portugal

**Author contributions:** Leão P evaluated the patient; Leao P, Rodrigues AJ, Pinto JP and Cordeiro A were involved in writing the manuscript and revising it critically for important intellectual content; Ferreira AMwas involved pathologic anatomy; Antunes C and Botelho P performed the surgery.

**Correspondence to: Pedro Leão, MD, PhD**, Department of General Surgery, Hospital of Braga, 4701-965 Braga, 2242 Apartado, Portugal. pedroleao@ecsaude.uminho.pt

**Telephone**: +351-915-303818 **Fax**: +351-253-027999

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**Abstract**

The ileal intussusception is the invagination of the small intestine within itself and accounts for 1 % of cases of acute obstruction. However, physicians do not initially consider intussusception as a possible diagnosis of obstruction due to its rarity in adults. Herein, we report a case of a 22-year-old male that was admitted to the Emergency Department with continuous abdominal pain. Ultrasonography and computed tomography revealed an ileal intussusception. Patient underwent surgical removal of the segment of the small bowel. Unexpectedly, pathology revealed that the invagination occurred due to an egg parasite, with features suggestive of *Schistosoma* species. The Schistosomiasis, although considered a parasitic disease in tropical countries, is not absent from Europe and though it is highly improbable, it may be responsible for cases of intussusceptions in adults.

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**Key words:** Ileal Intussusception; Parasit Egg; Bowel obstruction; *Schistosoma;* abdominal pain

**Core tip:** This manuscript reports a case of rare invagination in an adult, which was later found to be caused by a very rare event in non-tropical countries - an egg of a tropical parasite belonging to the Schistosoma species. This diagnosis was highly improbable in a non tropical country and this is the first report of such an event.

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**INTRODUCTION**

The ileal intussusception is the invagination of the small intestine within itself and is an exceptional cause of acute obstruction about 1 % of cases[1].

Abdominal pain is a very common complaint in adults seeking help in the emergency department. Even when an obstruction is diagnosed, doctors do not initially consider intussusception in adults, unlike children, since this is a rare cause of obstruction in this age group[2,3]. There are several benign or malignant predisposing causes that account for 90% of cases of small bowel intussusception in adults such as foreign bodies, polyps or Meckel's diverticulum1. The surgical approach, laparoscopic or laparotomic, invariably turns out to be necessary, before the etiological definition, given the fact that obstruction does not resolve with medical treatment in almost no cases of intussusception. In fact, in nearly 50% of cases, diagnosis of invagination in adults is only made during surgery[4,5].

**CASE REPORT**

Male patient, 22 years old, with no previous history of medication or known allergies. He was admitted to the Emergency Department of the Hospital de Braga, with continuous abdominal pain with 24 h of onset worsening with time, associated with nausea and vomiting. He reported constipation with two days of evolution. Analytical parameters (WBC, HGB, PCR, metabolic panel and liver function), showed no significant alterations. Ultrasonography and computed tomography revealed requisite findings consistent with ileal intussusception (Figures 1, 2A and 2B). The patient was proposed for surgical treatment. At exploratory laparoscopy, no visible alterations were found, hence the team opted for conversion to laparotomy. This allowed to identify an ileo-ileal intussusception, located approximately 30 cm from the ileocecal valve. During the procedure of desinvagination, we found a sub-mucosal lesion with approximately 2 cm × 1 cm. Posteriorly, enterectomy was performed with lateral anastomosis using a linear stapler; the ileum segment was sent to pathologist (Figure 3).

Intraoperative and postoperative was uneventful and the patient was discharged in the 6th day of hospitalization, apyretic, presenting no hemodynamic changes, and tolerating oral diet, with normalization of intestinal transit.

Surprisingly, the pathological anatomy revealed that there was evidence consistent with granulomatous inflammation due to the presence of an egg parasite, with features suggestive of *Schistosoma* species (Figure 4A and 4B). Parasite eggs are oval or round reproductive bodies that can be seen on the bowell wall with granuloma formation. They usually have a shell with variable thickness and can be seen on HE preparations. There are three main *Schistosoma* species causing intestinal infection: *S. mansoni* (114-175 × 45-70 µm wide with a lateral spine), *S. japonicum* (70-100 × 55-65 µm wide, a thin shell with a lateral and small spine) and *S. haematobium* (112-170 × 40-70 µm wide with a terminal and prominent spine). However, there are no special stains or techniques to identify eggs so the diagnosis rests on morfological grounds. We found a 75 µm wide ovoid structure with a thin and basophilic shell with some distortion so we could not assert the species.

**DISCUSSION**

The present clinical case illustrates some of the generalities described in the literature on the subject of intussusception. We demonstrate the importance of early surgical approach, even without definitive diagnosis of obstruction. The pathological analysis of the resected specimen turned out to reveal an interesting finding that, to our knowledge, was not described in the literature to date: an egg of *a Schistosoma species*. There are three species of *Schistosoma* with different morphological features, however, in this case the egg was distorted which unable the identification of the organism.These findings were even more interesting and rare in the light of evidence suggesting that this parasite is typical of tropical countries, uncommon in Europe. This patient also did not visit any tropical country, which makes this case even more improbable.

We believe that there may be two mechanisms that can potentially explain the observed invagination. First, it may occur due to an inflammatory reaction to a foreign body, with the growth of granuloma, eventually leading to fibrosis, and to a process of retraction of the ileal wall and consequent invagination. On the other hand, this may be a simple physical process, *i.e.,* the size of the granuloma may itself cause the invagination.

The intussusception in adults, although rare cause of intestinal obstruction, can never be forgotten in the approach to the patient with occlusive or sub - occlusive diagnosis. The most common causes of intussusception are the diverticulum or tumors (benign or malignant). However, we must not forget that any foreign body or even change endoluminal extrinsic compression may induce intussusception. The Schistosomiasis, although considered a parasitic disease in tropical countries, is not absent from Europe and may indeed be responsible for cases of intussusceptions in adults.

**COMMENTS**

***Case characteristics***

Male patient with 22-years-old with no previous relevant history, was admitted with continuous abdominal pain, nausea and vomiting.

***Clinical diagnosis***

Intestinal obstruction.

***Differential diagnosis***

Adhesions, internal hernia, diverticulitis of Meckel.

***Laboratory diagnosis***

Analytical parameters were within normal limits.

***Imaging diagnosis***

Ultrasonography and computed tomography revealed anatomic characteristics consistent with ileal intussusceptions.

***Pathological diagnosis***

Pathological anatomy revealed evidence consistent with granulomatous inflammation due to the presence of an egg parasite, with features suggestive of *Schistosoma* species.

***Treatment***

Exploratory laparoscopy, where no visible alterations were found, hence the team opted for conversion to laparotomy. This identified an ileo-ileal intussusception located approximately 30 cm from the ileocecal valve. During the procedure of desinvagination, we found a sub-mucosal lesion. Posteriorly, enterectomy was performed with lateral anastomosis using a linear stapler.

***Related reports***

To our knowledge, there are no related reports in the literature.

***Experiences and lessons***

Despite this is an extremely rare case, it shows that all the options should be considered when making a diagnosis of intestinal obstruction, even the most improbable ones.

***Peer review***

The strength of this article was the finding that the invagination occurred due to the presence of a tropical egg parasite, an exceptionally rare case in Europe, considering the fact that the patient did not visit any tropical country. The limitation was the difficulty in the identification of the *Schistosoma species* that the egg belonged to due to the lack of specific techniques to identify the different parasites.

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**Figure 1 Axial US show small bowel intussusception.** The echogenic mesenteric fat is seen trapped between the intussusceptum and the intussuscipiens.

**Figure 2 Corresponding coronal computed tomography (A) and sagital computed tomography (B) obtained after administration of intravenous contrast material show the dilated fluid-filled bowel lops as well as the intussusceptum and the intussuscipiens in the left lower quadrant, with trapped mesenteric fat.**

**Figure 3 Post-operative specimen of ileum segment with granuloma.**

**Figure 4 *Schistosoma* species.** A: HE bowel wall with granuloma formation; B: HEa 75 µm wide ovoid structure with a thin and basophilic shell and presenting a spine.