

Differential diagnosis of distal ileal obstruction in young women

What is the role of magnetic resonance enterography?

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Abstract

Intestinal obstruction is uncommon in young patients. Most cases present in young (premenopausal) women and tend to be related to inflammatory intestinal disease such as Crohn's disease or endometriosis with intestinal involvement. In this case series we present three female patients of reproductive age with intestinal obstruction symptoms who have differential diseases and outcomes. The initial approach to the obstruction included magnetic resonance enterography.

We present the cases, discussion and review of the literature on the differential diagnosis of distal ileal stenosis and the use of magnetic resonance enterography in this scenario. (*Acta Med Colomb* 2020; 45. DOI: <https://doi.org/10.36104/amc.2020.1327>).

Key words: *endometriosis, Crohn's disease, intestinal obstruction, ileal disease*

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Introduction

The small intestine (SI) is the longest segment of the gastrointestinal tract, where food is digested so that it can be adequately absorbed. Its length and location, and the fact that it is not a fixed organ, make diagnostic exploration limited, uncomfortable and risky. Thus, the initial approach to diseases affecting the SI is through imaging studies, which could have low specificity as they do not provide a histopathological diagnosis.

The differential diagnosis of stenotic SI lesions is extensive. The inflammatory causes include Crohn's disease (CD), chronic infectious enteritides such as tuberculosis; processes which cause SI ischemia, such as mesenteric insufficiency, focal segmental ischemia, vasculitis and collagenopathies. Iatrogenic enteritides (actinic enteritis, chemotherapy-induced, graft vs. host disease, nonsteroidal anti-inflammatory drug-induced enteropathy) and other miscellaneous causes like Waldeström macroglobulinemia, cryptogenic multifocal ulcerous stenosing enteritis, chronic ulcerative jejunoileitis, and Behçet's disease.

Magnetic resonance enterography (MRE) is destined to be a fundamental tool in the approach to obstructive diseases of the SI, as it has several advantages such as its ability to obtain images without radiation exposure; good resolution for soft tissues; and use in pregnant patients and those with allergies to iodine contrast (1). For CD, MRE is highly accurate in diagnosing the disease and detecting stenosis.

Therefore, it is becoming the first-line imaging modality for assessing disease progression, detecting complications and monitoring the response to treatment. One of the most useful applications is differentiating between fibrotic stenosis and active inflammation (2-3).

We present three clinical cases of young women of reproductive age with distal ileal obstruction associated with abnormal weight loss, having similar findings on MRE, but differential diagnoses and outcomes.

Clinical case presentations

Case 1

A 26-year-old previously healthy woman from a rural area. She had a two-month history of intestinal rumbling, distension and abdominal cramps associated with vomiting. In addition, in the previous three weeks she had had episodes of watery diarrhea with mucous and without blood. On the review of systems, she reported decreased appetite and a 10 kg weight loss in the last month, and therefore was hospitalized. On physical exam, she had abdominal distension and pain without peritoneal irritation. An abdominal x-ray showed distended loops without transition zones. Abdominal computerized axial tomography (CAT) showed no intra-abdominal lesions, just dilation of the small bowel loops and, therefore, she was referred to our institution due to suspected CD. The admission note described her as hydrated, tachycardic, with a distended abdomen and pain without peritoneal irritation.

She was managed with parenteral hydration, pain medication and antiemetics. A complete colonoscopy was ordered which revealed mild erosive ileitis and a normal colon. The ileal biopsy report showed active chronic ileitis with erosions (without granulomas; special staining with ZN, methenamine silver and IHC for CMV were negative). An MRE was then performed which showed inflammation with thickening of a 30 mm segment, small ulcers and stenosis (a segment with heterogeneous uptake of contrast and moderate diffusion restriction) (Figure 1A) in the distal ileum, 20 cm proximal to the ileocecal valve. Due to these findings, a retrograde double-balloon enteroscopy was performed to obtain a histological diagnosis and attempt pneumatic dilation of the stenosis. This stenosis was seen on enteroscopy, with a 3 mm residual lumen; dilation of the stenosis was not possible, and the biopsy results were similar to those described in the colonoscopy. Based on these findings, laparoscopic segmental resection was performed with end-to-end anastomosis. The pathology report indicated: severe active chronic fistulizing inflammation with transmural involvement up to the serosa, loss of crypt architecture and neutrophil microabscesses in the wall. The pathologist considered these findings to be compatible with Crohn's disease (Figures 1B and 1C). After surgical treatment, she was started on azathioprine at 2 mg/kg/day. On outpatient follow up, she reported being asymptomatic, with a normal follow up MRE. Currently, she is followed up clinically every six months.

Case 2

A previously healthy 28-year-old woman. She consulted due to a one-month history of abdominal cramps of variable intensity, postprandial abdominal distension, frequent intestinal rumbling and constipation. During the week prior to admission she had had frequent nausea and vomiting. On exam, she was dehydrated, with a distended abdomen which was painful to palpation, without peritoneal irritation. Due to the signs of obstruction, an abdominal CAT with contrast was ordered, which showed loop dilation and distal ileal thickening with a stenotic effect. With this result, she was admitted and underwent an MRE to determine the size and assess the fibroinflammatory component of the stenosis. This study showed marked dilation of the distal jejunum and ileum, associated with a 25 mm long fibrotic stenosis, approximately 30 cm from the ileocecal valve (Figure 2A). Due to its size and characteristics (a single, short lesion), CD was suspected. She was scheduled for a retrograde double-balloon enteroscopy to attempt dilation, but did not tolerate the preparation, due to multiple episodes of vomiting and abdominal pain. Perforation was suspected and she was scheduled for an exploratory laparotomy, during which an approximately 10 cm long stenotic lesion was found 5 cm from the ileocecal valve, with more than 5 cm dilation of the proximal intestine. The stenotic segment was resected, preserving the middle intestine, the cecum was freed from the Toldt line and an ileostomy was performed with a mucous

fistula, the latter to facilitate closure of the ileostomy. In this case, the presurgical suspicion was stenosing CD. The pathology report described a congestive, fibrous, thickened and irregular mucosa with stenotic areas. Microscopy identified extensive inflammatory areas of endometrial glands and stroma with surrounding fibrosis, without granulomas or tumors. With the pathology report, a definitive diagnosis of distal ileum endometriosis was made (Figures 2B-2C). On postoperative clinical follow up, the patient reported being asymptomatic. She was seen by gynecology, where she has continued to receive periodic clinical follow up, with no prescribed medications.

Case 3

A 42-year-old woman with no significant past medical history, who complained of an approximately three-month history of abdominal pain and distension, nausea, vomiting, constipation and an approximately 20 kg weight loss. The patient was seen in the emergency room several times, where an abdominal CAT was performed, documenting inflammatory stenosis of the distal ileum, with partial intestinal obstruction. On admission to the hospital, an MRE was ordered on which a stenosing lesion of the distal ileum was seen, with an acute inflammatory process compatible with lesions secondary to Crohn's disease (Figure 3A). She was scheduled for a retrograde double-balloon enteroscopy, and during the intestinal preparation she developed an acute abdomen, requiring exploratory laparotomy. The laparotomy revealed a cecal lesion with a tumor-like appearance adhered to the distal ileum 10 cm from the ileocecal valve, with microperforation and secondary peritonitis. The right colon was resected along with the last 50 cm of the distal ileum, and an ileostomy and mucous fistula were performed. The pathology report indicated a neuroendocrine tumor in the resected distal ileum (Figures 3B and 3C). Extension studies using abdominal and chest CAT with contrast were performed with no sign of distant metastatic lesions and, therefore, the intervention was considered to have a curative intention. She was asymptomatic at her six-month outpatient follow up.

Discussion

The differential diagnosis of stenosing lesions of the SI is extensive and the clinical presentation of these diseases is widely variable. Currently, the diagnosis of CD is progressively increasing. The Hospital Pablo Tobón Uribe is a regional reference center for IBD; we often see patients who present directly to the hospital or are referred from other institutions, especially from other parts of Valle de Aburrá, Chocó and Córdoba. In all patients with suspected diseases of the SI, an extensive clinical history should be taken and other causes that could explain the clinical findings rationally ruled out. The three patients presented were admitted with a probable diagnosis of IBD: in all of them, the cardinal symptom was obstructive, which is why stenosing CD was suspected.

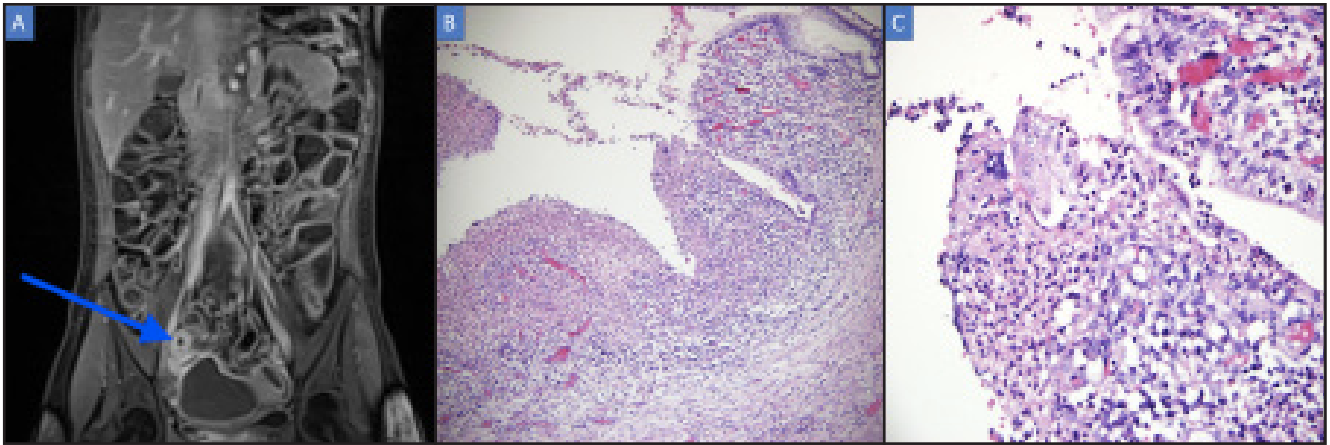


Figure 1A. MRE: Wall thickening, decreased lumen, prestenotic dilation corresponding to stenosing CD (blue arrow). Crohn's disease.

Figure 1B. (H&E- 100X) Distal ileum - Crohn's disease: Aphthoid ulcers with mural neutrophilic microabscesses and severe architectural damage, with alternating areas of nonulcerated mucosa that shows epithelial hyperplasia (upper right).

Figure 1C. (H&E- 400X) Distal ileum - Crohn's disease: villi with neutrophilic microabscesses, ulceration and architectural damage with complete crypt loss.

In the first case, CD with ileocecal involvement and obstruction was confirmed. The study of SI stenoses consists of determining the size, location and number of stenoses through imaging. The imaging is recommended to be either computed tomography enterography (CTE) or MRE. Computed tomography enterography is the most used technique in the United States for evaluating CD (4-5). It has the advantage of high spatial resolution, wide availability and a rapid diagnosis, but is associated with possible long-term harmful effects due to ionizing radiation exposure. The MRE eliminates exposure to ionizing radiation, but might lead to higher costs (according to what is reported in the literature), takes longer to perform, and is not available at all centers. Magnetic resonance enterography is highly accurate for diagnosing CD (78% sensitivity and 85% specificity), and has a sensitivity for detecting stenosis between 75 and 100%, with a specificity of 91-100% (2, 5). In expert hands, MRE can determine and distinguish between fibrotic and inflammatory stenosis. The importance lies in the treatment to follow, since fibrotic stenoses are mostly treated

with surgery, and inflammatory stenoses are usually treated medically (biological therapy and/or endoscopic dilations). In our hospital, there is greater availability of and experience with MRE; thus, it is our non-invasive study of choice for evaluating the SI when stenosis is suspected.

Once the location, number and size of the stenoses is confirmed, if they are smaller than 4 cm, they should be treated endoscopically with enteroscopy (6). If they are larger than 4 cm, local resection of the lesion is recommended. For multiple stenoses larger than 4 cm, the tendency is towards strictureplasty.

Crohn's disease is commonly located in the ileocolonic region, followed by isolated involvement of the SI. For patients from areas with endemic infectious diseases such as tuberculosis, or who are immunodeficient, intestinal tuberculosis (ITB) should be considered within the differential diagnosis (7-9). Crohn's disease and ITB cannot be differentiated with a single test, as the definitive diagnosis is established using the sum of clinical, endoscopic, radiological, laboratory and culture findings (7-9).

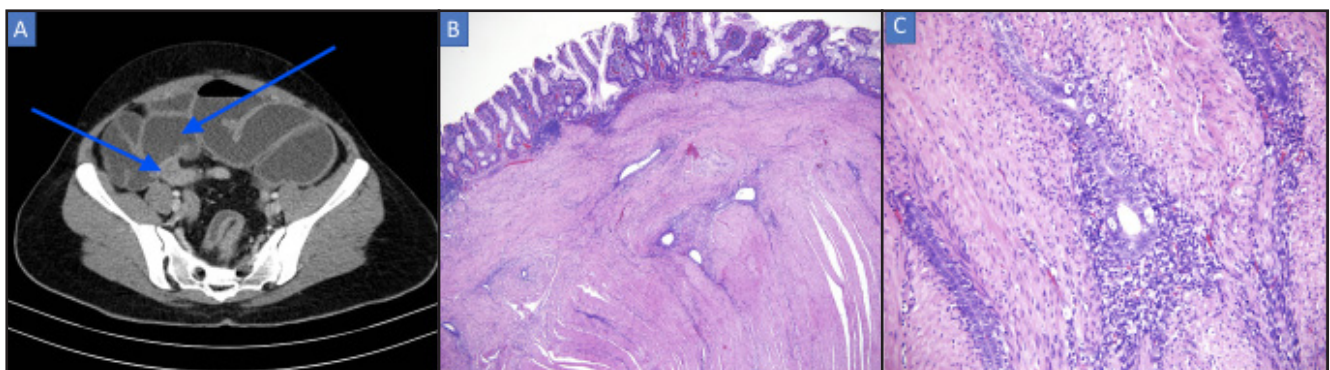


Figure 2A. MRE showing marked loop dilation and wall thickening in the distal ileum (blue arrow). Endometriosis.

Figure 2B. (H&E - 100X) Distal ileum - Endometriosis: ileal wall infiltrated with endometrial glands and stroma.

Figure 2C. (H&E - 200X) Distal ileum - Endometriosis: distal ileum muscularis propria layer infiltrated with endometrial glands and stroma.

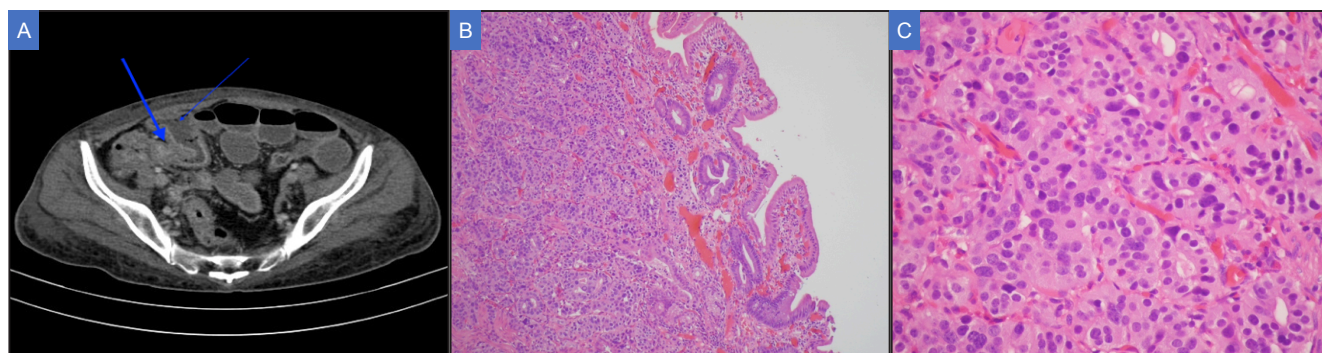


Figure 3A. MRE findings of distal ileum stenosis secondary to a neuroendocrine tumor
Neuroendocrine tumor

Figure 3B. (H&E - 100X) Distal ileum - Neuroendocrine tumor: intestinal mucosa infiltrated by neuroendocrine cell trabeculae, tubules, and acini within a fibrovascular stroma..

Figure 3C. (H&E - 200X) Distal ileum - Neuroendocrine tumor: neuroendocrine cell trabeculae, tubules and acini within a fibrovascular stroma. The nuclei show the salt-and-pepper chromatin characteristic of neuroendocrine tumors.

The second case presented an uncommon location of endometriosis (10-12). The diagnostic difficulty is greater in those whose symptoms are not clearly associated with the menstrual cycle (which occurs in 40% of cases). In addition, many authors report that there may be histopathological findings in endometriosis, such as architectural distortion of the mucosa; excessive mucosal reaction and inflammation with lymphoplasmacytic infiltration, ulcers and fissures, similar to those described in CD (10-11). In conclusion, the symptoms of ileal endometriosis could be similar to those found in CD, and even the histological findings may be an epiphenomenon of endometriosis rather than a true CD. Furthermore, when there are few pathology samples, the pathognomonic findings of endometriosis could be absent.

In the third case, it is striking that, despite documenting a 4 cm tumor (which implies a high tumor burden), she never had cardiovascular symptoms and/or flushing, as has been described in patients with neuroendocrine tumors (13). Neuroendocrine tumors are more frequent in patients with Crohn's disease, in whom they have been reported to be up to 15 times more common (14-15). The other malignant lines which are more common in CD are adenocarcinoma, lymphoma and epidermoid carcinoma (16). In cases in which CD coexists with a neuroendocrine tumor, the most common presentation in most cases is intestinal obstruction.

In conclusion, the causes of distal ileal obstruction should be analyzed according to the clinical context. The most relevant determinants are age group, immunological status, comorbidities, personal or family history of cancer, and history of prior abdominal surgery.

In young women of reproductive age, the most common causes are IBD and small intestine tumors, without forgetting endometriosis.

We emphasize that an extensive clinical history should be taken, and MRE could be part of the initial approach,

as it has very good operative characteristics. However, an abnormal finding suggesting CD should always be corroborated with histopathology. In cases requiring periodic imaging follow up, this could be the safest option with the best diagnostic yield.

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