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Single Case

Understanding the Presentation of Terminal Ileitis

Ashali Jain Xiaolan Tang Tyler Jones Sripal Aditya Padam

Graduate Medical Education/HCA Florida North Florida Hospital, Internal Medicine Residency Program, University of Central Florida College of Medicine, Gainesville, FL, USA

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Abdominal pain · Bowel obstruction · Crohn's disease · Differential diagnosis · Inflammatory bowel disease

Abstract
Our patient is a 47-year-old African American female with a past medical history of recurrent episodes of small bowel obstruction. She presented to the emergency department with symptoms of nausea, vomiting, and abdominal pain. Upon further evaluation, imaging showed obstruction at the terminal ileum. Based on the holistic clinical presentation, we initially thought that this patient was experiencing symptoms of early onset Crohn's disease. Gastroenterology evaluated the patient and was uncertain of the formal diagnosis. Colonoscopy and biopsy were not pathognomonic for Crohn's disease, suggesting that there may be a component of terminal ileitis or another inflammatory bowel disease process. This case exemplifies the degree to which these inflammatory bowel disease processes frequently overlap.

Introduction

Terminal ileitis refers to inflammation of the distal portion of the ileum and ileocecal valve. Clinical presentation can vary but often presents with abdominal pain with bloody or non-bloody diarrhea, and sometimes with chronic obstructive symptoms. Management typically centers on symptomatic control with steroids and dietary modification. However, as most patients often have overlapping symptoms with other inflammatory bowel diseases (IBD), diagnosis and management can vary. Our case is of a middle-aged woman who repeatedly presented with symptoms of small bowel obstruction (SBO) at the terminal ileum. Subsequent biopsy was significant for terminal ileitis associated with early onset of Crohn's

Correspondence to:
Ashali Jain, ashalijain13@gmail.com

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disease (CD). Our goal is to add to the literature on IBD when associated with recurrent SBO and the subsequent clinical presentation and evaluation.

Case Presentation

A 47-year-old African American female with a past medical history of iron deficiency anemia and multiple episodes of SBO presented to the emergency department for a recurrent episode of right lower quadrant abdominal pain, nausea, vomiting, and non-bloody diarrhea. She had her first episode of SBO 12 years ago, but they abruptly stopped. About 6 months prior to this presentation is when symptoms started recurring more frequently and with increased severity. This visit was her sixth such visit for abdominal pain, nausea, and vomiting.

During previous admissions, she was repeatedly treated for SBO; to date, she has not yet received a diagnosis for these episodes of nausea, vomiting, and abdominal pain. She was seen by gastroenterology outpatient and underwent upper endoscopy and colonoscopy. Upper endoscopy was normal. Colonoscopy did show a few superficial 4 mm ulcers in the terminal ileum. Biopsies of the terminal ileum confirmed chronic ileitis. To note, the patient denied any history of gastroenteritis or cancer, drug use, new medications or supplements, or nonsteroidal anti-inflammatory drug use.

Past surgical history was negative for any abdominal surgeries. Family history is notable for CD in her son. No family history of colon or gastric cancer; social history negative for alcohol, tobacco, or recreational drug use. Home medications did not include iron supplementation.

In the emergency department, vitals were within normal limits. Complete blood count showed chronic iron deficiency anemia, complete metabolic panel was unremarkable, and lipase was within normal limits. Chest X-ray did not show any acute pathology. Computer tomography abdomen was notable for dilated loops of small bowel consistent with partial bowel obstruction (Fig. 1, 2).

The patient was admitted to medical floors for further management. In the hospital, the patient was conservatively managed with fluids, steroids, proton pump inhibitors, and intravenous pain management for her bowel obstruction. She dramatically improved and, the next morning, endorsed relieved abdominal pain and no symptoms of nausea, emesis, or diarrhea. Upon discharge, she was prescribed budesonide 9 mg daily for 6 weeks due to suspicion for early onset of CD.

Discussion

Terminal Ileitis

Terminal ileitis is an inflammatory condition of the distal portion of the ileum, for which there are multiple potential etiologies. CD is the most common perpetrator of this illness. There are, however, various etiologies. Ulcerative colitis (UC), gastrointestinal infections, a number of rheumatologic conditions, neoplastic pathologies, eosinophilic enteritis, and ischemia are but a few potential causes of terminal ileitis. These other conditions have the potential to affect the ileum and may mimic CD from an endoscopic and even histological perspective. Ileitis often presents with right lower quadrant abdominal pain and diarrhea. Patients with conditions such as vasculitis and *Mycobacterium tuberculosis* can exhibit a chronic and debilitating course of illness that includes complications composed of obstruction, hemorrhage, and even extraintestinal manifestations [1–4].

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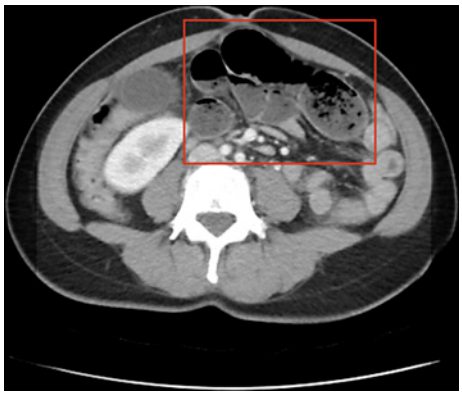

Fig. 1. Computer tomography abdomen and pelvis (transverse), demonstrating dilated small bowel loops in the mid-abdomen associated with multiple air fluid levels (highlighted in red).

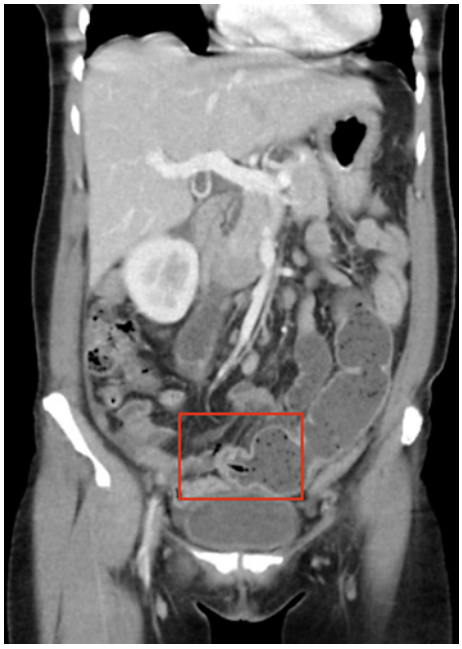

Fig. 2. Computer tomography abdomen and pelvis (coronal) consistent with a SBO. Red markings demonstrate transition zone.

The pathophysiologic processes of many of the diseases characterized in this article are preceded by a disruption in the homeostasis typically maintained within the gastrointestinal tract. The natural gut microbiome is crucial for adequate absorption of nutrients, regulation of potentially pathogenic flora, and overall health. Disruption of this microbiome portends the onset of numerous inflammatory illnesses [5–9]. The innate immune system is responsible for activation of acute inflammatory processes. Pathogen-associated molecular patterns are essential to this process. These are structures consistently present on pathogens that are broadly recognized by the immune system. Lymphocytes, macrophages, and natural killer cells are also major components of this immune response. In addition, dendritic cells and granulocytes contribute to this response via presentation of antigens. On the contrary, in chronic inflammatory processes, pathogen-associated molecular patterns activate toll-like receptors. Mitogen-activated protein kinases (MAPK) and nuclear factor kappa B (NF-κB) are the signaling cascades activated in this series of events. These underlying mechanisms are responsible for symptoms such as pain, bleeding, and altered bowel habits [8,10–12].

The inflammation of the ileum, especially the terminal ileum, is most often caused by CD. This manifestation is due to idiopathic transmural inflammation and may occur from the

mouth to the anus. The distal ileum is, however, the most frequently affected site. CD biopsies show an inflammatory cellular infiltrate with crypt abscesses, architectural distortion, and occasional granulomas [13–18]. UC is delineated from CD by its continuous pattern, starting from the anus and extending in a distal to proximal progression through the colon. This pattern rarely involves the ileum. And whereas CD is transmural, UC is isolated to the mucosal surface. In rare instances during which the ileum is involved, it is referred to as backwash ileitis. This inflammation within the ileum occurs due to reduced ileocecal valve function in severe UC. The severity of ileal inflammation corresponds to the severity of the patient's presentation. Patients with UC must develop pancolitis prior to the formation of backwash ileitis. With respect to CD, it is common for these patients to suffer from terminal ileitis, without the illness impacting the rest of the colon. Thus, terminal ileitis due to CD is typically easy to distinguish from terminal ileitis caused by UC. Granted, given the growing evidence for overlap between these illnesses, it is prudent to acquire colonic biopsies from these patients [19–21].

In conclusion, we present a case of a middle-aged woman with recurrent episodes of SBO, who was eventually formally diagnosed with terminal ileitis. Though ileitis can occur for a variety of reasons, in our particular patient, it is suggestive of an early manifestation of Crohn's, even though Prometheus panel was completely negative. We present this case to better illustrate the clinical presentation and associated differential diagnoses in the hopes of improving overall clinical practice. This case demonstrates the significance of the clinician's ability to delineate between the various forms of IBD. Cases such as the one detailed above reiterate the importance of being able to delineate between causes of IBD. Competency in doing so allows for efficient evaluation and treatment. CD can present in a subtle way, and it is vital that clinicians consider it in their differential diagnoses in both outpatient and inpatient centers. The CARE Checklist has been completed by the authors for this case report and is attached as online supplementary material (for all online suppl. material, see www.karger.com/doi/10.1159/000527920).

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Statement of Ethics

This study protocol was reviewed and approved by HCA PubClear and DataClear Committee, approval number 7448. Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images.

Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

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Author Contributions

Dr. Ashali Jain wrote the case description of the manuscript, obtained consent from healthcare organization for publication, and assisted with submission of the manuscript. Dr. Xiaolan Tang wrote the discussion section of the manuscript. Dr. Tyler Jones wrote the conclusion and abstract of the manuscript and aided with the submission process. Dr. Sripal Padam provided critical revisions as well as expertise about the subject matter.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

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