

CLINICAL VIGNETTE

Chronic Diarrhea due to Intestinal Spirochetosis: An Unusual Pathogen in an Immunocompetent Host

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Intestinal spirochetosis (IS) is a well-known organism whose potential pathogenicity has been the source of much discussion. We present a case of chronic gastrointestinal symptoms attributable to IS followed by a brief review of the organism.

Case Presentation

A 32-year-old male without any significant past medical history presented for evaluation of 10 days of blood and mucus in his stool following unprotected receptive anal intercourse several weeks prior. In addition to these acute symptoms, he also described chronic diarrhea occurring five times daily with left sided abdominal pain that was not associated with bowel movements. Until his presentation, the diarrhea was without any blood or mucus. He denied any tenesmus, fevers, chills, sweats, or weight loss. His chronic symptoms were without any obvious triggers such as a change in diet or new medications. He denied any NSAID use or any family history inflammatory bowel disease.

Initial diagnostics were remarkable for a positive *Chlamydia trachomatis* rectal swab as well as a mild elevation of the erythrocyte sedimentation rate at 16 mm/hr (normal < 12 mm/hr). Complete blood counts, chemistry panel, liver function testing, and C-Reactive protein were unremarkable.

Due to the frequency and character of diarrhea along with left sided abdominal pain, a diagnostic colonoscopy was performed.

The terminal ileum was unremarkable. The colonic mucosa was remarkable only for a sessile 5 mm polyp which was resected and found to be a sessile serrated adenoma. Random mucosal biopsies from the colon and rectum intended to evaluate for microscopic colitis revealed intestinal spirochetosis. Intestinal spirochetosis is an unusual finding in the immunocompetent host, which prompted testing for Human Immunodeficiency Virus (HIV) and syphilis. Both tests were negative.

The patient was treated with 14 days of Metronidazole 500 mg three times daily for IS in addition to treatment of chlamydia proctitis. At 3 month follow up, he had complete resolution of the chronic abdominal pain and diarrhea presumed to be a result of IS, as well as resolution of the acute discharge from *Chlamydia* proctitis.

Discussion

Human intestinal spirochetosis is a rare cause of chronic diarrhea and abdominal pain, especially in immunocompetent patients. IS was first described in 1967 as an intensely staining basophilic “pseudo-brush border” on the luminal surface of colonic epithelium when viewed on routine histology with hematoxylin and eosin.¹ The organisms are sigmoidal bacteria, 2-6 μm long and 0.2 μm in diameter with 4 flagella at each end. Hundreds to thousands of spirochetes can occupy a single human colonocyte. The most common intestinal spirochetes found in the colon are *Brachyspira aalborgi* and *Brachyspira pilosicoli*. These spirochetes lack cytoplasmic tubulii and are therefore unrelated to non-intestinal spirochetes such as a *Treponema pallidum*.^{2,3}

The prevalence of IS varies amongst different populations. Studies from developed, first world countries utilizing colonoscopy or sigmoidoscopy with biopsy report an estimated prevalence between 2.5 – 5% in asymptomatic patients and up to 6.9% of patients with colorectal symptoms.^{4,6} The prevalence of IS in the developing world is thought to be higher, with studies utilizing fecal culture estimating a prevalence of 11.4 - 32.6%, irrespective of symptoms.⁷ Certain populations such as homosexual men have a higher prevalence of IS with an estimated prevalence of up to 30% in asymptomatic patients.⁸ The prevalence patterns suggest a multifactorial means of colonization or infection which are likely influenced by diet, hygiene, sanitation, and sexual transmission.⁷ A recent study from Japan showed a trend towards increasing prevalence over a 10 year study period from 0.5% in 2001 to 2.8% in 2011.⁹

The clinical significance of human IS has been the subject of much controversy.¹⁰ Many patients with documented IS lack any gross or histologic signs of inflammation that would be expected from a pathogenic organism. Electron microscopy has shown in some cases, abnormalities of the epithelium which include blunting and loss of microvilli, defects of the glycocalyx, and swelling of the mitochondria. These findings suggest that malabsorption, instead of inflammation, may contribute to the diarrhea and abdominal pain which are common presenting symptoms of the condition.¹¹ Regardless of the pathophysiology, countless reports confirm improvement in symptoms with antibiotic treatment directed at IS. Prior work by Martinez, et al suggests that various strains of IS may be

associated with virulence factors - similar to *Helicobacter pylori* - which can result in pathogenicity from an otherwise commonly found organism. It is likely that a combination of host, environmental, and pathogen factors contribute to the clinical significance of IS in an individual host.^{12,13}

We conclude that IS should be considered in the differential diagnosis of chronic colorectal symptoms such as abdominal pain and diarrhea. This case highlights the importance of mucosal evaluation by colonoscopy with biopsy, even in the absence of typical “red flag” signs or symptoms which may suggest a more organic etiology such as inflammatory bowel disease. If IS is found in the presence of colorectal symptoms, we recommend a 10-14 day course of Metronidazole. If IS is found in the absence of colorectal symptoms, we suggest no antibiotic treatment.

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