

CASE REPORT

Colonic Spirochaetosis: An Unusual Cause of Chronic Diarrhea in the Developed World

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INTRODUCTION

Infection of the intestinal tract with spirochaetosis is not a new phenomenon, but has been a known entity within the gastrointestinal (GI) tract for many centuries.¹ Debate exists as to whether its presence within the GI tract is pathogenic or commensal.² The two most common strains of spirochaetes found within the human GI tract are *Brachyspira aalborgi* and *Brachyspira pilosicoli*.³ If the presence of these microbes are pathogenic, the pathway is poorly understood.⁴ Spirochaetosis is more common in communities with poor living standards and those who are HIV positive.

Asymptomatic colonization is not uncommon and the prevalence of carriage has a wide distribution. In random rectal biopsies obtained in communities with high living standards, the prevalence was estimated to be 0.4 - 6.9% and there was little association with gastrointestinal symptoms.⁵

We report a case of colonic spirochaetosis associated with chronic diarrhea that improved with treatment.

CASE REPORT

A 50-year-old Caucasian male presented to the gastroenterology clinic by referral from the patient's primary care physician with a complaint of several years' duration of loose bowel movements. The patient had a history of gastroesophageal reflux disease, benign prostatic hyperplasia, and hyperlipidemia. At the time of presentation, the only medications the patient was taking were omeprazole and tamsulosin, both chronic medications.

The patient reported two to three loose bowel movements daily with associated lower abdominal pain and occasional melena. The patient endorsed a diet high in saturated fatty acids and carbohydrates. He increased his fiber intake, believing he suffered from irritable bowel syndrome; however, this intervention had no impact on his pain or loose stools.

He denied change in appetite, weight loss, hematochezia, fever, and chills. The patient endorsed a history of extensive handling of chickens and chicken droppings. The patient's examination prior to endoscopy only revealed mild diffuse abdominal tenderness with deep palpation but no guarding or rebound. Given the age-appropriate need for screening colonoscopy and the patient's complaints, a colonoscopy was performed in addition to routine laboratory evaluation with a comprehensive metabolic panel, complete blood cell count, and serology for celiac disease; all were negative. The patient also was tested for HIV and hepatitis C, which were negative.

On endoscopy, he had normal appearing mucosa and random biopsies were obtained throughout the colon to evaluate for possible microscopic colitis. Serum tissue transglutaminase IgA antibody was negative. On pathologic evaluation of the random biopsies, there was a carpeting of spirochaetes on the mucosa throughout the ascending, transverse, and descending colon. The patient was referred to an infectious disease specialist. After evaluation, the patient was started on metronidazole 500 mg four times daily for a duration of ten days. In follow-up after completion of his treatment regimen, the diarrhea and lower abdominal pain had resolved. The patient underwent a repeat colonoscopy with random biopsies three months after he completed treatment, which showed no further spirochaetosis.

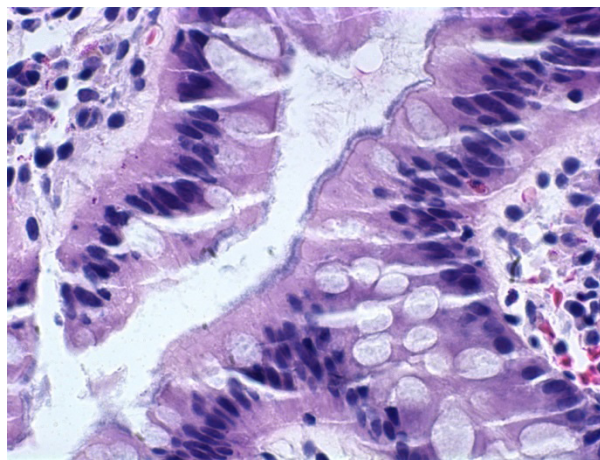


Figure 1. Spirochaete infection noted along the brush border.

DISCUSSION

Chronic watery diarrhea is a common presenting complaint to the primary care physician's clinic with a wide differential diagnosis. Infection by spirochaetes is an uncommon cause of chronic diarrhea, but is a diagnosis which should be considered. The most common presenting complaint of symptomatic infection with spirochaetes is mild to moderate disease symptoms including watery diarrhea, vague abdominal pain, flatulence, constipation, and fecal blood.^{6,7}

The prevalence of spirochaete infection within developed countries is believed to be 1.1 - 5% and as high as 11.4 - 63.4% in countries with reduced access to sanitation services.^{6,8} The most common pathogens within the human population are gram negative *Brachyspira aalborgi* and *Brachyspira pilosicoli*; the *aalborgi* species is most likely

commensal and the pilosicoli species has greater pathogenicity.^{9,10} This theory is supported by the slow-growing nature of the aalboyi species, in contrast to positive blood cultures of the pilosicoli species seen in critically ill patients.¹¹ Homosexual males and HIV-infected individuals have a higher rate of colonization and findings of spirochaetosis in any patient should be a marker for investigation of HIV status.⁷ The diagnosis of spirochaetosis can be obtained either by random biopsies, PCR testing, and/or anaerobic cultures, although culture is limited due to the anaerobic and slow growing nature of the organism.¹²

The pathogenic nature of spirochaetosis is not understood, nor is its clinical significance when found in the GI tract.¹³ The enteropathogenicity of this organism has been obtained from zoonotic and observational studies. The leading theory is that the pathogenic nature of this organism is secondary to the depth of invasion into the intestinal wall, with greater penetration leading to a greater symptomatic presentation. With greater penetrance into the intestinal wall, there is increased microvilli destruction leading to decreased resorptive areas of the damaged brush border.^{4,14,15} The mode of transmission is not known at this time, but likely is linked to diet, sanitation, and poor living standards.⁶ Although the possibility of zoonotic transmission between humans, chickens, and pigs has been established by studies isolating strains of spirochaetes and transferring interspecies.³

The need for treatment of this condition is debated. Standard treatment includes metronidazole for a typical 14-day course, with amoxicillin as a second line option, although resistance to penicillin has been noted.^{3,16} Eradication of organisms did not lead to improvement of clinical symptoms. In addition, there has been a lack of consistent visualized inflammation on pathologic slides even when carriage is present.^{2,9,16} The lack of response has led many experts to take a “wait and see” approach to treatment.⁹ At this time, there was no need for follow-up evaluation to detect eradication of the spirochaetes, as there is no correlation between clearance and symptoms.

In the presented case, spirochaetes on biopsy is highly suggestive of spirochaetosis as the source of the diarrhea in combination with his symptom resolution after treatment. Other etiologies of chronic diarrhea were ruled out with thorough endoscopic evaluation, negative biopsies for inflammatory bowel disease, microscopic colitis, and celiac disease. The possibility of irritable bowel syndrome (IBS) as the etiology of the patient’s symptoms cannot be excluded, but given the lack of IBS treatments provided to the patient and his quick improvement in symptoms after metronidazole, with no further recurrence, suggest against this diagnosis. No clear medication source was identified as the etiology of the patient’s complaints and no medications were withdrawn that would correlate with the patient’s improvement.

Although infection with spirochaetosis is uncommon in countries with high living standards, it is important to keep

this etiology of diarrhea as a part of the differential diagnosis. A patient diagnosed with spirochaete infection should be evaluated for HIV, with treatment targeted for symptomatic patients.

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