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Intestinal spirochetosis: An unusual cause of postantibiotic diarrhea

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A 40-year-old immunocompetent woman, who had not traveled abroad recently, was admitted because of pneumonia associated with asthmatic fits. Antibiotic therapy with sulbactam/ampicillin and azithromycin was given for a week. While her pneumonia and asthmatic fits improved, she developed watery diarrhea on the 3rd hospital day, which then persisted. Stool examinations showed negative for *Clostridium difficile* (CD) toxin and sterile culture. Selorogical tests denied an infection of amebic dysentery. Colonoscopy performed on the 9th hospital day revealed multiple flat-elevated mucosal lesions in the cecum and ascending colon (Figure 1). No pseudomembranous lesions were apparent. The biopsies taken from cecum and ascending colon showed a diffuse blue fringe along the surface epithelium of the colonic mucosa (Figure 2A). This finding is referred to as a "false brush border," a characteristic histology of intestinal spirochetosis (IS) on hematoxylin-eosin staining. Numerous spirochetes were highlighted by Warthin-Starry silver staining (Figure 2B). No other microbes, such as *Entamoeba histolytica*, were not identified. In the lamina propria, moderate neutrophil infiltration was evident, along with many air bubble holes (micropneumatosis). These latter were considered to be secondary to asthmatic fits. She was then treated with metronidazole followed by amoxicillin with a favorable outcome. A follow-up colonoscopy showed no intestinal lesions, and at-random biopsies proved to be free from IS.

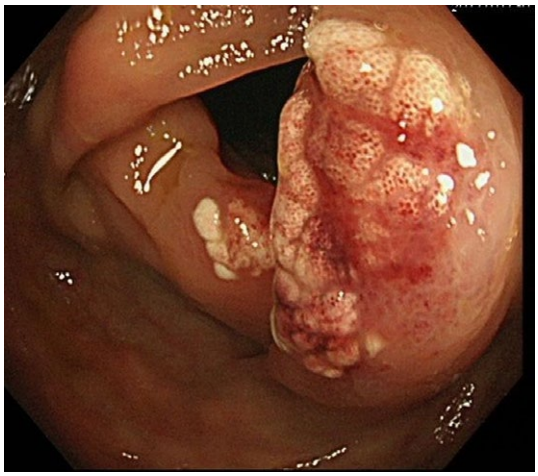

FIGURE 1 Colonoscopic findings. Multiple flat-elevated mucosal lesions, up to 10 mm in diameter, are illustrated. The lesions are soft and pale-yellow in color

Intestinal spirochetosis, a zoonosis, is characterized by heavy colonization of colonic mucosa by spirochetes. At least two species of spirochetes, *Brachyspira aalborgi* and *Brachispira pilosicoli*, have been associated with IS in humans.[1] The condition is usually regarded as harmless because many patients with IS are asymptomatic. However, it has been postulated that the spirochetes can gain pathogenicity and become invasive in a minority of patients, because of either augmented virulence of the involved spirochetes or factors leading to diminished host defense.[1] Indeed, spirochetes have been implicated in the manifestation of bowel symptoms such as diarrhea, purulent discharge, and rectal bleeding.[1] Very rarely, the spirochetes are associated with hepatitis and bacteremia.[1] In the present case, although it was unclear when the patient was

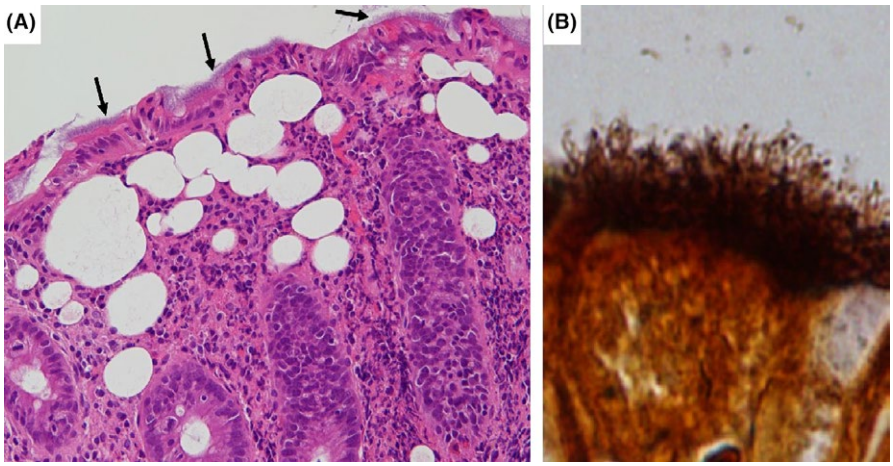

FIGURE 2 Histopathological findings. A, Hematoxylin-eosin staining (original magnification ×200). Intestinal spirochetosis, characterized by a "fringed" blue line along the surface epithelium (arrows), is apparent, in association with moderate neutrophil infiltration. Micropneumatosis is also evident. B, Warthin-Starry silver staining (original magnification ×1000 with oil immersion). Numerous spirochetes are highlighted

affected by spirochetes and whether her IS was in commensal state, IS might have caused colitis as a result of microbial substitution and/or altered host-microbe relationships after pneumonia and antibiotic administration. It is well known that pseudomembranous colitis is the most common pathology when diarrhea develops after antibiotic administration. However, our case indicates that IS might be included in the list for differential diagnosis with postantibiotic diarrhea.

In daily clinical practice, IS is diagnosed histopathologically and it is often overlooked without a high index of diagnostic suspicion.[2] Therefore, for its diagnosis, close collaboration among physicians and pathologists is important, sharing knowledge concerning IS as a potential cause of colitis.

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CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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