

# Human Intestinal Spirochetosis: A Case Report

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## Learning points for clinicians

- **Human Intestinal Spirochetosis (HIS) can cause a variety of gastrointestinal symptoms including diarrhoea and abdominal pain**
- **Most common in immunocompromised and men who have sex with men (MSM)**
- **Symptomatic cases may be treated with a course of metronidazole**

Human intestinal spirochetosis is characterised by colonisation of the colonic mucosa by spiral-shaped bacteria. While often asymptomatic, HIS can cause chronic diarrhoea, abdominal pain, or rectal bleeding, particularly in immunocompromised individuals and homosexual men. Diagnosis is typically made via histological analysis of colonic biopsies. Symptomatic cases may be treated with antibiotics, most commonly metronidazole.

## Case

A 47 year old immunocompetent homosexual male presented with a six-month history of diarrhoea, reporting six to seven bowel movements daily, including nocturnal episodes. He denied rectal bleeding or mucous. His history included alcohol excess and previous withdrawal seizures.

Colonoscopy demonstrated macroscopically normal mucosa, with histological examination revealing preserved glandular architecture and a normal lamina propria inflammatory infiltrate. However, all specimens exhibited a characteristic fuzzy basophilic fringe on the luminal surface, which was further highlighted by immunohistochemical staining using anti-*Treponema pallidum* antibodies, consistent with a diagnosis of intestinal spirochetosis.

Following initial observation, the patient remained symptomatic and was commenced on a course of doxycycline, chosen over metronidazole due to alcohol history. Follow up showed modest symptom improvement, with stool frequency reduced to four times daily.

## Discussion

Human intestinal spirochetosis (HIS) was first described in 1967 and is histologically diagnosed by the presence of spirochetes adherent to colonic epithelial cells. *Brachyspira aalborgi* and *brachyspira pilosicoli* are the most commonly implicated species.<sup>1</sup> These bacteria may reside on colonic epithelial surfaces or infiltrate the lamina propria.<sup>2</sup> The route of transmission is thought to be faecal-oral.<sup>3</sup>

HIS is more common in homosexual men and those with HIV.<sup>1</sup> It is rare in developed countries, with a prevalence of 2-7% in rectal biopsy samples from Western populations but higher rates occur in Asia, Southern India, and West Africa.<sup>2,4</sup> Chronic watery diarrhoea is the most common symptom, though some patients experience constipation, alternating bowel habits, abdominal pain or rectal bleeding.<sup>2</sup> The exact mechanism remains unclear but is thought to result from microvilli destruction and loss of absorptive surface area.<sup>5</sup>

The gold standard for diagnosing HIS is through routine histological examination of colonoscopy biopsy specimens. On hematoxylin and eosin (H&E) staining, spirochetes appear as light purple filaments. (Fig 1A) However, Warthin- Starry silver staining or immunohistochemistry using cross-reactive anti-*treponema pallidum* antibodies offers greater contrast, enhancing the visualisation of spirochetes against the tissue background. (Fig 1B)<sup>2,5</sup>

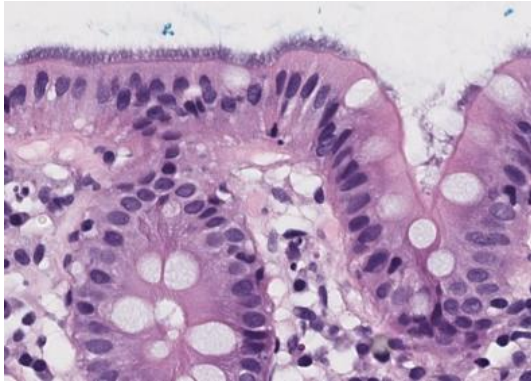


Figure 1A

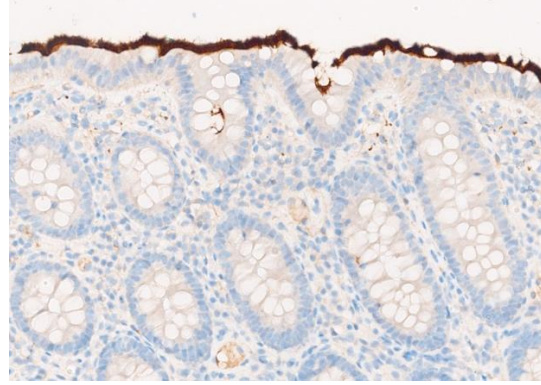


Figure 1B

Figure 1A. Haematoxylin and eosin-stained section of a representative colonoscopic biopsy shows the characteristic fuzzy basophilic luminal surface indicating colonisation by spirochetes. Underlying glandular architecture is preserved and there is no associated inflammation.

Figure 1B. Immunohistochemistry for *Treponema pallidum*, antibodies against which cross-react with other spirochetes including *Brachyspira* species, highlights the luminal fringe, confirming a diagnosis of spirochetosis.

Management typically involves a conservative ‘watch and wait’ approach, particularly in asymptomatic individuals. For symptomatic cases, metronidazole is often used first line.<sup>1,3,5</sup>

The clinical relevance of HIS remains a subject of debate. Some studies suggest that these bacteria function as commensals, however other studies report symptoms in up to 86% of cases.<sup>6</sup> Symptoms are more likely when spirochetes infiltrate the epithelial layer rather than adhere superficially. Symptom severity appears to correlate with mucosal invasion, microvilli loss, and spirochete density.<sup>2,6</sup>

## Conclusion

HIS has well-defined histological features but unclear clinical significance. Its varied presentations – from asymptomatic to chronic gastrointestinal symptoms – suggests roles for host immune status and bacterial load. Accurate diagnosis relies on careful histological examination, and whilst conservative management often suffices, antimicrobial therapy may be warranted in symptomatic individuals.

Further research is needed to elucidate the mechanisms underlying symptom development, standardise diagnostic criteria, and clarify the clinical relevance of HIS in both immunocompetent and immunocompromised populations.

## References

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