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## CLINICAL VIGNETTE

# Blastocystis hominis: Two presentations of a Potential Parasitic Pathogen

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### Case #1

A 23-year-old healthy male presented to the office with a several week history of diarrhea and gastrointestinal cramping. He had been on a month-long service trip in Ecuador and was predominantly stationed in the Amazonian rain forest. While camping, he experienced a diarrheal illness. He was prescribed an antibiotic, and his symptoms seemed to improve. Two weeks later, the same symptoms returned. This time period overlapped with his return, and he was evaluated in the office. His symptoms self-resolved in about two days but recurred again a few days later. Given this was his third occurrence of diarrhea, cramping, and mild emesis, stool studies were obtained to evaluate for any ongoing infection. Three out of three stool samples returned positive for *Blastocystis hominis*. All were negative for pathogenic bacteria. He was given a ten-day course of metronidazole, and his symptoms fully resolved without recurrence.

### Case #2

A 44-year-old female with autoimmune thyroiditis not on medication presented with recurrent urticaria. For several months, she had experienced tender nodules on her arms and legs. She saw a dermatologist who diagnosed pressure urticaria. During the same time, she complained of bloating, flatulence, and diarrhea. A stool screening revealed *Blastocystis hominis*. She was initially treated with metronidazole but was intolerant of the side effects. She later completed two rounds of treatment with nitazoxanide and noted improvement in both the urticarial rash and gastrointestinal symptoms.

### Discussion

*Blastocystis* is a protozoan parasite that is commonly found in the intestinal tracts of humans and animals. It generally resides in the colon and transmission is thought to be fecal-oral through contaminated food and water. Prevalence ranges from 5% in developed countries to more than 50% in the developing world.<sup>1</sup> *Blastocystis* is detected in stool specimens. Common diagnostic testing includes direct visualization under the microscope or polymerase chain reaction based assays.<sup>1</sup> It can also be cultured under anaerobic conditions. The life cycle consists of four stages: cyst, vacuolar, granular, and amoeboid. The cyst stage is suspected of being the most pathogenic.<sup>2</sup>

The pathogenicity of *Blastocystis* sp. remains controversial. Several subtypes have been identified and all are considered to be potentially infectious.<sup>3</sup> Patients with classic infections will

commonly exhibit diarrhea, bloating, abdominal pain, flatulence, and emesis. The challenge is that it can often be isolated from the stool of asymptomatic individuals, which is suggestive of a chronic carrier state.<sup>4</sup> Additionally, patients with classic digestive complaints can often have more than one pathogenic isolate from their stool making determination of the actual pathogen difficult.

A less common presentation of *Blastocystis* is chronic spontaneous urticaria. Several studies have demonstrated the role of parasitic infections in recurrent hives and *Blastocystis* has been isolated in several cases. Parsi and Gupta presented a 24-year-old woman with recurrent urticaria that was initially thought to be contact mediated but later found to have the parasite in her stool. Several early treatments with prednisone and anti-histamines temporarily improved her rash, but it was only with antimicrobial therapy with metronidazole did her symptoms complete cease.<sup>5</sup> The exact pathway by which intestinal parasites cause urticarial rash is not well defined. Kolkhir et al<sup>6</sup> theorize that parasite specific antigens interact with IgE on the surface of mast cells causing degranulation and release of histamine.

Metronidazole remains the mainstay of antibiotic therapy for treatment of *B. hominis*. A blinded study of metronidazole against placebo demonstrated 75% resolution of symptoms in the antibiotic group compared with only 33% in the placebo arm. Of note, the rate of parasitic relapse was high in the metronidazole group at six months' post-treatment for unclear reasons.<sup>7</sup> Generally, high dose metronidazole 750mg three times daily for 7-10 days is the preferred dosing regimen. Additional drugs that have been used include tinidazole, paromomycin, and nitazoxanide. Finally, there are no guidelines for treatment of *B. hominis* and it is at the discretion of the practitioner to determine its role in illness and the necessity of therapy.

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