

CLINICAL VIGNETTE

A Mimic of Irritable Bowel Syndrome: Blastocystis Hominis Infection

Scott Hahm, MD

Case

A 32-year-old male presented to gastroenterology with chronic diarrhea, bloating and rectal urgency for 5 years. His symptoms started after new employment in a very stressful office setting. His predominate symptom was a sense of bloating. His bloating caused him to have mild, chronic and diffuse abdominal pain, typically 1 or 2 out of 10 on the pain scale. Having a bowel movement did not alleviate his sense of bloating. He denied ever seeing any blood or mucous in his stool. He had on average, 3-4 loose stools per day without any unintentional weight loss. He was born in the United States and had no significant travel history preceding the onset of his symptoms. He was previously evaluated by a gastroenterologist who diagnosed him with irritable bowel syndrome, diarrhea predominant. He was initiated on a probiotic *Bifidobacterium 35624*, which helped alleviate some of his symptoms. He was also given a trial of polyethylene glycol electrolyte solution, which provided temporary improvement in his symptoms for several days at a time. The patient also modified his diet with abstinence from gluten and dairy as well as a low FODMAP (Fermentable Oligo-, Di-, Mono-saccharied and polyols) diet without improvement in his symptoms.

Lab evaluation including fecal studies was positive for *Blastocystis homonis* vacuoles in ova and parasite stool studies. He was treated with metronidazole 500mg three times daily for 14 days resulting in complete resolution of his symptoms.

Discussion

Blastocystis hominis is a unique infectious organism. Previously classified as a yeast, it has now been reclassified as a parasitic infection. *B. hominis* is strongly associated with chronic illnesses, such as irritable bowel syndrome and colon cancer, and is thus clinically relevant in patients with chronic gastrointestinal complaints.¹ Despite *B. hominis*' current classification as a parasite, its taxonomical position remains undetermined.² This parasite is typically found in one of three forms in human feces: vacuolar, granular, and amoeboid. The vacuolar form is considered to be the most common form found in patients' stool samples. It often appears as a central vacuole surrounded by a rim of cytoplasm which contains several nuclei.³ *B. hominis* is found in a diverse group of hosts, including humans, farms animals, birds, rodents, reptiles, amphibians, fish and cockroaches.⁴ It has an estimated incidence of 10% in developed countries and may exceed 60% in developing countries.¹ Another oddity regarding *B. hominis* infection the overall lack

of consensus about its pathogenicity. Most literature favors *B. hominis* as a "non pathogenic protozoa" and thus the need for treatment remains in debate. Much of this debate is because the mechanisms by which the parasite can cause symptoms remain poorly understood. Chandramathi and colleagues have hypothesize that physical stress to the body can change the balance of anti-oxidative versus oxidative stress. When a host's body begins to favor oxidative stress, *B. hominis* can cause tissue damage by altering immune cell function.¹ There are several genotypes of *B. hominis*. Genotype 1 has been strongly associated with causing pathology, while genotypes 3 and 4 are pathogenic only some of the time. In contrast, genotype 2, was not found to be pathogenic at all.⁵ For symptomatic patients, current treatment is metronidazole 750mg twice daily for 5-10 days or TMP-Sulfa 160-800mg twice daily for 5-10 days.

B. hominis is typically found in immunocompromised patients including AIDS and transplant patients, travelers, gay men, children in day care, animal handlers, and patients in developing nations.³ In this case we found *B. hominis* in an immunocompetent, heterosexual male, in a developed nation, has no travel history, without routine contact with animals. Prior to his infectious work up the patient was inaccurately diagnosed as having irritable bowel syndrome. However, current guidelines from the American College of Gastroenterology do not recommend routine testing in persons with typical IBS symptoms or those without alarm features.⁶ In this particular case, this contributed to the delay in diagnosis of an infection that is easily treatable.

Conclusion

B. hominis is the most common parasitic infection in the world and has a prevalence of approximately 10% in industrialized countries.¹ It commonly causes symptoms that can mimic those of irritable bowel syndrome, such as bloating, diarrhea, abdominal pain, and has been found to be associated with irritable bowel syndrome in epidemiological studies. However, despite *B. hominis*' prevalence and association with irritable bowel syndrome, current guidelines for irritable bowel syndrome do not recommend routine screening for *B. hominis*. This case describes a patient who did not have any typical risk factors for *B. hominis* infection, but ultimately tested positive. Treatment led to the complete resolution of his symptoms. This case suggests that patients with irritable bowel symptoms may benefit from early testing for *B. hominis*.

REFERENCES

1. **Chandramathi S, Suresh K, Sivanandam S, Kuppusamy UR.** Stress exacerbates infectivity and pathogenicity of *Blastocystis hominis*: in vitro and in vivo evidences. *PLoS One*. 2014 May 2;9(5):e94567. doi: 10.1371/journal.pone.0094567. eCollection 2014. PubMed PMID: 24788756; PubMed Central PMCID: PMC4008615.
2. **Sukthana Y.** Is *Blastocystis hominis* a human pathogenic protozoan? *J Trop Med Parasitol*. 2001; 24:16-22.
3. **Basak S, Rajurkar MN, Mallick SK.** Detection of *Blastocystis hominis*: a controversial human pathogen. *Parasitol Res*. 2014 Jan;113(1):261-5. doi:10.1007/s00436-013-3652-4. Epub 2013 Oct 30. PubMed PMID: 24169810.
4. **Yoshikawa H, Wu Z, Howe J, Hashimoto T, Geok-Choo N, Tan KS.** Ultrastructural and phylogenetic studies on *Blastocystis* isolates from cockroaches. *J Eukaryot Microbiol*. 2007 Jan-Feb;54(1):33-7. PubMed PMID: 17300516.
5. **Fouad SA, Basyoni MM, Fahmy RA, Kobaisi MH.** The pathogenic role of different *Blastocystis hominis* genotypes isolated from patients with irritable bowel syndrome. *Arab J Gastroenterol*. 2011 Dec;12(4):194-200. doi:10.1016/j.ajg.2011.11.005. Epub 2011 Dec 20. PubMed PMID: 22305500.
6. **Ford AC, Moayyedi P, Lacy BE, Lembo AJ, Saito YA, Schiller LR, Soffer EE, Spiegel BM, Quigley EM; Task Force on the Management of Functional Bowel Disorders.** American College of Gastroenterology monograph on the management of irritable bowel syndrome and chronic idiopathic constipation. *Am J Gastroenterol*. 2014 Aug;109 Suppl 1:S2-26; quiz S27. doi: 10.1038/ajg.2014.187. Review. PubMed PMID: 25091148.

Submitted May 30, 2018