

# Blastocystis Research Foundation

---

5060 SW Philomath Blvd, #202  
Corvallis, OR 97333-1044  
FAX/VM: 815-572-9701  
www.bhomcenter.org

June 23, 2011

The following file is a list of studies which identify Blastocystis as pathogenic.

This document and others are available from BRF's web site,

<http://www.bhomcenter.org>

The methodology used in selecting these studies is identical to that used in the following study:

Boorom KF, Smith H, Nimri L, Viscogliosi E, Spanakos G, Parkar U, Li LH, Zhou XN, Ok UZ, Leelayoova S, Jones MS. [Oh my aching gut: irritable bowel syndrome, Blastocystis, and asymptomatic infection.](#) Parasit Vectors. 2008 Oct 21;1(1):40.

URL for this paper:

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2627840/?tool=pubmed>

The reader can refer to that study for details. Additionally, several pages which describe the methodology follow this page.

Related URL's:

Complete list of Pubmed-Indexed studies identifying Blastocystis as pathogenic (144 studies):

[http://bhomcenter.org/pdfs/2011\\_06\\_BRF\\_PATHOGENIC\\_LIST.pdf](http://bhomcenter.org/pdfs/2011_06_BRF_PATHOGENIC_LIST.pdf)

Same list as above, including abstracts (144 studies):

[http://bhomcenter.org/pdfs/2011\\_06\\_BRF\\_PATHOGENIC\\_LIST\\_LONG.pdf](http://bhomcenter.org/pdfs/2011_06_BRF_PATHOGENIC_LIST_LONG.pdf)

Complete list of Pubmed-Indexed studies identifying Blastocystis as non-pathogenic (17 studies):

[http://bhomcenter.org/pdfs/2011\\_06\\_BRF\\_NONPATHOGENIC\\_LIST.pdf](http://bhomcenter.org/pdfs/2011_06_BRF_NONPATHOGENIC_LIST.pdf)

Same list as above, including abstracts (17 studies):

[http://bhomcenter.org/pdfs/2011\\_06\\_BRF\\_NONPATHOGENIC\\_LIST\\_LONG.pdf](http://bhomcenter.org/pdfs/2011_06_BRF_NONPATHOGENIC_LIST_LONG.pdf)

Best Regards,

Ken Boorom  
Vice President Research  
Blastocystis Research Foundation

# Supplementary File #3 for "Oh my aching gut: IBS, Blastocystis, and asymptomatic infection"

BMC Parasites and Vectors, 2008

**This Excel file contains four spreadsheets which can be accessed by selecting the appropriate tab at the bottom on the screen**

## Contents

Worksheet "MethodsResults"	This worksheet
Worksheet "MoreResults"	Table comparing researcher finding with study method
Worksheet "StudiesIncluded"	List of all studies included in this analysis
Worksheet "StudiesNotIncluded"	List of all studies not included in this analysis

## ANALYSIS OF RESEARCHER CONCLUSION ON PATHOGENICITY IN PUBLISHED STUDIES OF BLASTOCYSTIS INFECTION

### Methods Used In Systematic Review of Blastocystis Papers:

Articles indexed by the United States National Institutes of Health PubMed database were searched for the term Blastocystis on January 19, 2008. Articles were included where medically relevant information was reported regarding Blastocystis pathogenicity in immunocompetent humans following some study of Blastocystis from a human, or study of Blastocystis isolates known to be carried by humans. Studies reporting that Blastocystis was pathogenic were only included if information could be obtained from that study's title and abstract. An additional effort was made to identify studies that reported that Blastocystis was non-pathogenic. A full-text copy of any paper finding Blastocystis was non-pathogenic was obtained, and the citations were searched for further studies that supported that view. These studies were added to this survey.

Studies were classified as reporting Blastocystis being a "non-pathogenic organism" when no immune response was found, no association was found between Blastocystis infection and symptoms or no medically relevant physiological changes were found in association with Blastocystis infection.

Studies were classified as reporting Blastocystis being a "pathogenic organism" when an immune response unique to symptomatic patients was detected, Blastocystis infection was associated with symptoms, or medically relevant physiological changes were found in association with Blastocystis infection. The review methods were separated into various specific categories using the criteria below.

**Animal studies** seek to assess pathogenicity by determining if laboratory animals that are experimentally infected with the organism exhibit symptoms of disease.

**Antibody studies** seek to determine if patients in whom an organism is suggested to cause disease exhibit a specific antibody response to the organism that was absent in asymptomatic patients.

**Genotyping studies** seek to assess pathogenicity by determining if symptomatic status is correlated with a specific genotype of an organism.

**Clinical studies** seek to infer pathogenicity from information collected about the patient's symptoms, response to medical interventions, and test results in a clinical environment.

**In vitro cell culture** studies co-culture the organism with intestinal epithelial cells and determine if the impact of the organism on the cells is consistent with the symptoms reported in the infection.

**Case Reports** can be considered clinical studies performed with a small number of patients.

Studies that used 10 or more patients were classified as **clinical studies**.

**Epidemiological surveys** seek to assess pathogenicity by determining if symptoms occur at a higher rate in a group with Blastocystis infection or by determining if Blastocystis occurs at a higher rate in a group with disease (case-control study)

**Physiological studies** seek to assess pathogenicity by identifying measurable physiological properties that are altered during infection with Blastocystis

## Results of Survey

Of the 680 studies returned through the PubMed search, 102 met the criteria for inclusion in this review. Excluded studies consisted of 209 microbiological studies without clinical information; 134 parasitological surveys that did not include clinical information; 53 reviews; 49 studies of Blastocystis in immunocompromised persons; 40 studies that did not focus on Blastocystis directly; 38 studies of Blastocystis in animals; 36 studies where insufficient information was available in the title and abstract to assess the study's conclusions; 12 comments on other studies; and 7 studies where no clear conclusion was discernable.

Of the 102 papers meeting this review criteria, 16% (16/102) reported findings consistent with Blastocystis being non-pathogenic, while 84% (86/102) of the studies reported data suggesting that Blastocystis caused disease (pathogenic).

### NOTES:

In the survey of studies conducted for this review, it was found that 44% (8/18) of the studies performed in North America before 1994 reported negative findings, while only 7% (6/85) of the studies performed after 1994 or outside North America reported such findings, a statistically significant correlation ( $P < 0.0022$ , Fisher's Exact Test).

# PubMed

U.S. National Library of Medicine  
National Institutes of Health

Filter your results: All (144)

[Manage Filters](#)

Display Settings: Abstract, 200 per page, Sorted by Pub Date

## Results: 144

[Am J Trop Med Hyg.](#) 2011 Jun;84(6):883-5.

1. **Blastocystis sp. Subtype 4 is Common in Danish Blastocystis-Positive Patients Presenting with Acute Diarrhea.**

Stensvold CR, Christiansen DB, Olsen KE, Nielsen HV.

Laboratory of Parasitology, Department of Microbiological Diagnostics, Statens Serum Institut, Copenhagen, Denmark.

### Abstract

Abstract. Fecal samples from 444 Danish patients presenting with acute diarrhea were tested for Blastocystis and positive samples were subtyped to investigate the prevalence and subtype distribution of Blastocystis in this patient group. A total of 25 patients (5.6%) were positive, and 19 of these patients (76.0%) were positive for Blastocystis sp. ST4. Because the relative prevalence of ST4 in other patients presenting with other types of diarrhea (persistent, travel-related, and human immunodeficiency virus-related) in Denmark is low, the role of Blastocystis sp. ST4 in the etiology of acute diarrhea should be investigated further.

PMID: 21633023 [PubMed - in process]



[Parasitol Res.](#) 2011 May;108(5):1139-46. Epub 2010 Dec 7.

2. **The potential use of 29 kDa protein as a marker of pathogenicity and diagnosis of symptomatic infections with Blastocystis hominis.**

Abou Gamra MM, Elwakil HS, El Deeb HK, Khalifa KE, Abd Elhafiz HE.

Department of Parasitology, Faculty of Medicine, Ain Shams University, Ramsis St., Abbassia, 11566, Cairo, Egypt.

### Abstract

The present study was performed to characterize the protein profiles of Blastocystis hominis isolates from symptomatic and asymptomatic individuals by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) and immunoblotting using sera from symptomatic and asymptomatic patients. The presence of immunogenic bands associated with pathogenicity or of diagnostic potentials was also evaluated. The study comprised 80 individuals classified into four groups, 20 each: symptomatic blastocystosis (G1), asymptomatic blastocystosis (G2), other parasitic infections (G3), and healthy control subjects (G4). SDS-PAGE analysis of individual antigens from symptomatic and asymptomatic B. hominis isolates revealed similar and distinctive antigenic bands with significant differences in two high (123.5 and 112.3 kDa) and few low molecular weight bands (48.5, 38, 42.3, and 35.5 kDa). Immunoblotting was performed using symptomatic and asymptomatic antigen pools with sera of the four studied groups. It was found that anti-B. hominis IgG reacted with nine protein bands ranging from 100 to 18 kDa of the symptomatic antigen pool. There was a significant difference between G1 and G2 in the recognition of 64, 56, 38, and 29 kDa antigen bands. Also, anti-B. hominis IgG reacted with five protein bands ranging from 56 to 12 kDa of asymptomatic antigen pool. There was a significant difference between G1 and G2 in the recognition of 29 kDa antigen band. These findings suggest the potential use of the 29-kDa antigen as marker of pathogenicity and implicate its use in the diagnosis and differentiation between symptomatic and asymptomatic blastocystosis.

PMID: 21136081 [PubMed - in process]



[Parasitol Res.](#) 2011 May;108(5):1207-10. Epub 2010 Nov 23.

3. **Six ulcerative colitis patients with refractory symptoms co-infective with Blastocystis hominis in China.**

Tai WP, Hu PJ, Wu J, Lin XC.

Department of Gastroenterology, Beijing Shijitan Hospital, Beijing, 100038, China. taiweiping@hotmail.com

**Abstract**

Blastocystis hominis is an enteric parasite which has long been considered as an innocuous commensal living in the intestinal tract. Our research was to explore the role of B. hominis in refractory ulcerative colitis. Our department admitted 122 cases of ulcerative colitis patients. In these patients, there were 73 cases of patients who were responsive to sulfasalazine, mesalazine in a standard dosage, according to the symptoms change. There was one patient who was detected to have B. hominis infection through stool detection. There were 49 patients with relapse symptoms. In this group, there were six patients who were detected with B. hominis infection through stool detection. The six patients of refractory ulcerative colitis were treated with metronidazole for 10-14 days. They almost completely recovered 3 weeks later. Patients diagnosed with ulcerative colitis should always consider this parasite infection when the symptoms are refractory and cannot be released.

PMID: 21104272 [PubMed - in process]



■ Parasitol Res. 2011 Mar;108(3):541-5. Epub 2010 Oct 5.

4. **Clinical efficacy of Saccharomyces boulardii or metronidazole in symptomatic children with Blastocystis hominis infection.**

Dinleyici EC, Eren M, Dogan N, Reyhanioglu S, Yargic ZA, Vandenplas Y.

Department of Pediatrics, Faculty of Medicine, Eskisehir Osmangazi University, Eskisehir, Turkey. timboothtr@yahoo.com

**Abstract**

Although many Blastocystis infections remain asymptomatic, recent data suggest it also causes frequent symptoms. Therapy should be limited to patients with persistent symptoms and a complete workup for alternative etiologies. The goal of this study was to compare the natural evolution (no treatment) to the efficacy of Saccharomyces boulardii (S. boulardii) or metronidazole for the duration of diarrhea and the duration of colonization in children with gastrointestinal symptoms and positive stool examination for Blastocystis hominis. This randomized single-blinded clinical trial included children presenting with gastrointestinal symptoms (abdominal pain, diarrhea, nausea-vomiting, flatulence) more than 2 weeks and confirmed B. hominis by stool examination (B. hominis cysts in the stool with microscopic examination of the fresh stool). The primary end points were clinical evaluation and result of microscopic stool examination at day 15. Secondary end points were the same end points at day 30. Randomization was performed by alternating inclusion: group A, S. boulardii (250 mg twice a day, Reflor®) during 10 days; group B, metronidazole (30 mg/kg twice daily) for 10 days; group C, no treatment. At day 15 and 30 after inclusion, the patients were re-evaluated, and stool samples were examined microscopically. On day 15, children that were still symptomatic and/or were still B. hominis-infected in group C were treated with metronidazole for 10 days. There was no statistically significant difference between the three study groups for age, gender, and the presence of diarrhea and abdominal pain. On day 15, clinical cure was observed in 77.7% in group A (n, 18); in 66.6% in group B (n, 15); and 40% in group C (n:15) (p < 0.031, between groups A and C). Disappearance of the cysts from the stools on day 15 was 80% in group B, 72.2% in group A, and 26.6% in group C (p = 0.011, between group B and group C; p = 0.013, between group A and group C). At the end of the first month after inclusion, clinical cure rate was 94.4% in group A and 73.3% in group B (p = 0.11). Parasitological cure rate for B. hominis was very comparable between both groups (94.4% vs. 93.3%, p = 0.43). Metronidazole or S. boulardii has potential beneficial effects in B. hominis infection (symptoms, presence of parasites). These findings challenge the actual guidelines.

PMID: 20922415 [PubMed - in process]



■ Parasitol Res. 2011 Jan 29. [Epub ahead of print]

5. **Protease activity of Blastocystis hominis subtype3 in symptomatic and asymptomatic patients.**

Abdel-Hameed DM, Hassanin OM.

Department of Parasitology, Faculty of Medicine, Ain Shams University, 13 B Kornesh El Neel, Aghkhan, Shobra, Cairo, Egypt, emara7777@yahoo.com.

**Abstract**

Despite accumulating evidence indicating that Blastocystis hominis is pathogenic and that cysteine proteases are involved in its pathogenesis, few researches discussed the protease activity of B. hominis genetic subtypes. Therefore, the present study aims to identify the underlying pathogenic role of the proteases of B. hominis subtype 3 at different molecular weights in correlation to gastrointestinal symptoms. Of 65 patients with various clinical presentations referred to our laboratory for stool examination, 26 (40%) were B. hominis positive by stool culture. Of 26 (group I) B. hominis patients, 18 (69.2%) were symptomatic (group IA) and 8(30.8%) were asymptomatic (group

IB). Of 25 normal control group (group II), 5 (20%) were *B. hominis* positive. Subtype 3 was the only genotype recovered by polymerase chain reaction. Of 26 patients in group I, 19 (73.1%) were immunocompetent and 7 (26.9%) were immunocompromised. Protease activities of *B. hominis* subtype 3 were recognized at 32-kDa (46.2%), 39-kDa (7.7%), 120-kDa (38.5%), 140-kDa (11.5%), and 215-kDa (19.2%) bands in gelatin sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). Proteases were recognized in 17 (94.4%) out of 18 symptomatic Blastocystis patients versus 2 (25.0%) out of 8 asymptomatic patients. Proteases at 32 kDa were reported in 61.1% of symptomatic versus 12.5% of asymptomatic patients. It was concluded that proteases of *B. hominis* genetic subtype 3, particularly those at 32 kDa, could be considered a virulence factor that is responsible for protein degradation and have a possible pathogenic role in host immune evasion.

PMID: 21279383 [PubMed - as supplied by publisher]



■ PLoS One. 2010 Nov 18;5(11):e15484.

6. **Comparison of methods for detection of Blastocystis infection in routinely submitted stool samples, and also in IBS/IBD Patients in Ankara, Turkey.**

Dogruman-AI F, Simsek Z, Boorum K, Ekici E, Sahin M, Tuncer C, Kustimur S, Altinbas A.

Department of Medical Microbiology, Gazi University School of Medicine, Beşevler, Ankara, Turkey.

**Abstract**

**BACKGROUND:** This study compared diagnostic methods for identifying Blastocystis in stool samples, and evaluated the frequency of detection of Blastocystis in patients with irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD).

**RESULTS AND DISCUSSION:** From a set of 105 stool specimens submitted for routine parasitological analysis, 30 were identified as positive for Blastocystis by the culture method. From that group of 30 positives, Lugol's stain, trichrome staining, and an immunofluorescence assay identified 11, 15, and 26 samples as positive respectively. Using culture as a standard, the sensitivity of Lugol's stain was 36.7%, trichrome staining was 50%, and the IFA stain was 86.7%. The specificity of Lugol's stain was 91%, trichrome staining was 100%, and the IFA stain was 97.3%. In the group of 27 IBS and IBD patients, using all methods combined, we detected Blastocystis in 67% (18/27) of the patients. Blastocystis was detected in 33% (2/6) of IBD patients and 76% (16/21) of IBS patients. For comparison, trichrome staining alone, the method most frequently used in many countries, would have only identified Blastocystis infection in 29% (6/21) of the IBS patients. No parasitic co-infections were identified in the IBS/IBD patients. Most Blastocystis-positive IBS/IBD patients were over 36 with an average length of illness of 4.9 years.

**CONCLUSIONS:** Most IBS patients in this study were infected with Blastocystis. IFA staining may be a useful alternative to stool culture, especially if stool specimens have been chemically preserved.

PMID: 21124983 [PubMed - indexed for MEDLINE] PMCID: PMC2987810 **Free PMC Article**



**Publication Types, MeSH Terms**

■ Parasitol Int. 2010 Sep;59(3):469-71. Epub 2010 Apr 2.

7. **Blastocystis sp. subtype 2 detection during recurrence of gastrointestinal and urticarial symptoms.**

Vogelberg C, Stensvold CR, Monecke S, Ditzén A, Stopsack K, Heinrich-Gräfe U, Pöhlmann C.

Pediatric Department, University Hospital of Dresden, Fetscherstr. 74, Dresden, Germany.

**Abstract**

Blastocystis is a common unicellular intestinal parasite in humans. Its clinical relevance is still subject to discussion with numerous conflicting reports on its ability to cause disease. A remarkable genetic heterogeneity among isolates suggests an association between distinct subtypes (STs) and pathogenicity, although a clear correlation between symptoms and subtype is lacking. Here, we report on a clinical case which possibly links Blastocystis sp. ST2 infection with the simultaneous occurrence of gastrointestinal illness and generalized chronic urticaria. Despite repeated chemotherapy with different antimicrobial drugs, both the gastrointestinal and cutaneous disorders reoccurred after short symptom-free intervals. Eradication of the parasite and permanent resolution of the patient's medical condition was finally achieved with the combined application of metronidazole and paromomycin.

PMID: 20363362 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

Parasitol Res. 2010 Aug;107(3):679-84. Epub 2010 Jun 8.

8. **Blastocystis hominis and Dientamoeba fragilis in patients fulfilling irritable bowel syndrome criteria.**

Yakoob J, Jafri W, Beg MA, Abbas Z, Naz S, Islam M, Khan R.

Department of Medicine, Aga Khan University Hospital, Karachi, Pakistan. yakoobjaved@hotmail.com

#### Abstract

Studies have suggested a possible role for *Blastocystis hominis* and *Dientamoeba fragilis* in the etiology of irritable bowel syndrome (IBS). We studied the prevalence of *B. hominis* and *D. fragilis* in patients with IBS-diarrhea (IBS-D). Three hundred and thirty patients were enrolled, 171 (52%) with IBS-D and 159 (48%) were controls, respectively. Stool microscopy, culture, and polymerase chain reaction (PCR) for *B. hominis* and *D. fragilis* were done. *B. hominis* was positive by stool microscopy in 49% (83/171) of IBS compared to 24% (27/159) in control ( $p < 0.001$ ). *B. hominis* culture was positive in 53% (90/171) in IBS compared to 16% (25/159) in control ( $p < 0.001$ ). *B. hominis* PCR was positive in 44% (75/171) in IBS compared to 21% (33/159) in control ( $p < 0.001$ ). *D. fragilis* microscopy was positive in 3.5% (6/171) in IBS-D compared to 0.6% (1/159) in control ( $p = 0.123$ ). *D. fragilis* culture was positive in 4% (7/171) in IBS compared to 1.3% (2/159) in control ( $p = 0.176$ ). *D. fragilis* PCR was positive in 4% (6/171) in IBS-D compared to 0% (0/159) in control ( $p = 0.030$ ). *B. hominis* is common, while *D. fragilis* was less prevalent in our patients with IBS-D. *B. hominis* and *D. fragilis* culture had a better yield compared to stool microscopy and PCR.

PMID: 20532564 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

Parasitol Res. 2010 Aug;107(3):685-9. Epub 2010 May 25.

9. **Pathogenic potential of Blastocystis hominis in laboratory mice.**

Elwakil HS, Hewedi IH.

Department of Parasitology, Faculty of Medicine, Ain Shams University, Ramsis St., Abbassia, Cairo, Egypt. hasa66@hotmail.com

#### Abstract

*Blastocystis hominis* is a ubiquitous enteric protozoan whose pathogenic potential is still controversial. This study was carried out to clarify the pathogenicity of *B. hominis* infection and to study the proper number of parasites for mice infection. A total of 15 albino mice were orally inoculated with *B. hominis* and divided according to the inoculum, 10(2), 10(5), and 4 x 10(7) *B. hominis* forms/100 microl saline, into three groups consisting of five mice each, GI, GII, GIII, respectively. In addition with group IV (uninfected control) consisting of five mice. All mice were sacrificed 2 weeks post-infection. The results revealed that all mice of GIII and two mice of GII got the infection while all mice of GI showed a completely negative result. Histopathological examination of large intestine on highly infected group (GIII) showed that *B. hominis* infiltrated the lamina propria, the submucosa, and the muscle layers in the form of collection of vacuolar forms. This was accompanied by active colitis with infiltration of mixed inflammatory cells. In conclusion, this study revealed that large number of *B. hominis* is essential for oral infection of mice and that vacuolar forms of *B. hominis* can invade the lamina propria, the submucosa, and even the muscle layers.

PMID: 20499092 [PubMed - indexed for MEDLINE]



### MeSH Terms

Ann Trop Med Parasitol. 2010 Jul;104(5):449-52.

10. **Elevated levels of urinary hyaluronidase in humans infected with intestinal parasites.**

Chandramathi S, Suresh K, Kuppusamy UR.

Department of Parasitology, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia.

PMID: 20819313 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

[Parasitol Res.](#) 2010 May;106(6):1459-63. Epub 2010 Apr 1.

#### 11. **Urinary hyaluronidase activity in rats infected with Blastocystis hominis--evidence for invasion?**

Chandramathi S, Suresh KG, Mahmood AA, Kuppusamy UR.

Department of Parasitology, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia.

#### Abstract

The fact whether *Blastocystis hominis* can invade has always been in question. Apart from a few sporadic studies such as that done on gnotobiotic guinea pigs which showed surface invasion and mucosal inflammation of the host's intestine caused by *B. hominis* infection, no real documentation of invasion has been proven. Studies have shown that hyaluronidase is secreted during the penetration into the host's skin and gut by nematode parasites. Hyaluronidase activity in protozoa namely *Entamoeba histolytica* has also been described previously. This study attempts to determine hyaluronidase in urine samples of *B. hominis*-infected rats. The presence of hyaluronidase in urine provides an indirect evidence of invasion by *B. hominis* into colonic epithelium causing the degradation of extracellular matrix proteins namely hyaluronic acid (HA). HA is depolymerized by hyaluronidase which may be used by organisms to invade one another. In this study, the levels of urinary hyaluronidase of Sprague-Dawley rats infected with *B. hominis* were monitored for 30 days. Hyaluronidase levels in the infected rats were significantly higher on days 28 and 30 compared to the day before inoculation ( $P < 0.01$  and  $P < 0.05$ , respectively). During this stage, parasitic burden in infected stools was also at a high level. Proinflammatory cytokines, interleukin-6 and interleukin-8, were also significantly higher ( $P < 0.05$ ) in the serum of infected rats. The study demonstrates that since no other pathogen was present and that amoeboid forms of the parasites have been shown to exist previously, the elevated levels of hyaluronidase in this preliminary finding suggests that the organism is capable of having invasion or penetration activity in the hosts' intestine.

PMID: 20358228 [PubMed - indexed for MEDLINE]



### MeSH Terms, Substances

[Parasitol Res.](#) 2010 May;106(6):1315-20. Epub 2010 Mar 20.

#### 12. **Encystation--survival of Blastocystis hominis in immunocompetent mice abdomen cavity.**

Zhou XB, Zhang X, Qiao JY, Cai J, Cheng S, Yuan Y, Li J.

Immunology and Pathogenic Organism Biology Department of Medical School, Xi'an Jiaotong University, No 76 Yanta West road, Xi'an, Shaanxi, China.

#### Abstract

Human *Blastocystis hominis* were isolated from diarrhea patients' feces and cultured in vitro. Then the cultures were inoculated intraperitoneally to laboratory mice. The *B. hominis* in living mice were collected and inoculated again to healthy mice. The *B. hominis* showed dose-dependent pathogenicity in the primary inoculation. No pathogenicity was observed in the secondary inoculation. The protozoan existed in the living mice abdomen cavity for more than 6 months and the cyst was the only form. These results showed that encystation enable the parasite to avoid the immune attack in competent host and simultaneously decrease the pathogenicity to host. Intraperitoneal inoculation to laboratory mice is a good method to maintain and propagate *B. hominis*. This is also a good model to study the interaction of *B. hominis* and immune system.

PMID: 20306208 [PubMed - indexed for MEDLINE]



### MeSH Terms

■ [Vet Parasitol.](#) 2010 Apr 19;169(1-2):8-17. Epub 2010 Jan 4.

13. **Molecular characterization of Blastocystis isolates from zoo animals and their animal-keepers.**

[Parker U](#), [Traub RJ](#), [Vitali S](#), [Elliot A](#), [Levecke B](#), [Robertson I](#), [Geurden T](#), [Steele J](#), [Drake B](#), [Thompson RC](#).

WHO Collaborating Centre for the Molecular Epidemiology of Parasitic Infections, School of Veterinary and Biomedical Sciences, Murdoch University, Western Australia, Australia. U.Parker@murdoch.edu.au

**Abstract**

Blastocystis is an enteric protist and one of the most frequently reported parasitic infections in humans and a variety of animal hosts. It has also been reported in numerous parasite surveys of animals in zoological gardens and in particular in non-human primate species. PCR-based methods capable of the direct detection of Blastocystis in faeces were used to detect Blastocystis from various hosts, including non-human primates, Australian native fauna, elephants and giraffes, as well as their keepers from a Western Australian zoo. Additional faecal samples were also collected from elephants and giraffes from four other zoos in Amsterdam (The Netherlands), Antwerp (Belgium), Melbourne and Werribee (Australia). Information regarding the general health and lifestyle of the human volunteers were obtained by questionnaire. Overall, 42% and 63% of animals and zoo-keepers sampled from the Western Australian zoo were positive for Blastocystis, respectively. The occurrence of Blastocystis in elephants and giraffes from other cities was similar. This is the first report of Blastocystis found in the elephant, giraffe, quokka, southern hairy nosed wombat and western grey kangaroo. Three novel and what appear to be highly host-specific subtypes (STs) of Blastocystis in the elephant, giraffe and quokka are also described. These findings indicate that further exploration of the genetic diversity of Blastocystis is crucial. Most zoo-keepers at the Perth Zoo were harbouring Blastocystis. Four of these zoo-keeper isolates were identical to the isolates from the southern hairy nosed wombat and five primate species.

PMID: 20089360 [PubMed - indexed for MEDLINE]



**MeSH Terms**

■ [Parasitol Res.](#) 2010 Apr;106(5):1033-8. Epub 2010 Feb 23.

14. **Irritable bowel syndrome: is it associated with genotypes of Blastocystis hominis.**

[Yakoob J](#), [Jafri W](#), [Beg MA](#), [Abbas Z](#), [Naz S](#), [Islam M](#), [Khan R](#).

Department of Medicine, The Aga Khan University, Karachi, Pakistan. yakoobjaved@hotmail.com

**Abstract**

Blastocystis hominis is the most common intestinal parasite in humans. An extensive genetic variability has been described recently in B. hominis isolates. The aim of this study was to analyze genotypes of B. hominis isolates obtained from the healthy individuals and patients with irritable bowel syndrome-diarrhea (IBS-D). The patients with IBS-D were enrolled from gastroenterology outpatient department at the Aga Khan University Hospital. History and physical examination was done. Stool microscopy, culture, and polymerase chain reaction for B. hominis genotyping were carried out. The study included 158 patients with IBS-D, mean age 41 +/- 15, age range 16-83 years, and male/female ratio of 109:49. One hundred fifty-seven (49.8%) were taken as healthy control. The dominant B. hominis genotypes were genotype 1 in 87 (65%) and type 3 in 49 (37%). In IBS-D, genotype 1 was present in 75 (86%; P < 0.001) compared to 12 (14%) in controls while type 3 was present in 23 (47%) compared to 26 (53%) in controls (P < 0.001), respectively. Infection with single genotype of B. hominis was present in 70 (73%) with IBS-D and in 26 (27%) in control group while with multiple genotypes in 25 (64%) in IBS-D and 14 (36%) in control group (P = 0.30), respectively. Majority of our patients had typeable B. hominis infection. The genotype of B. hominis in IBS-D was type 1 while in control genotype 3 was predominant.

PMID: 20177906 [PubMed - indexed for MEDLINE]



**Publication Types, MeSH Terms, Substances**

■ [Parasitology.](#) 2010 Apr;137(4):605-11. Epub 2009 Dec 7.

15. **High levels of oxidative stress in rats infected with Blastocystis hominis.**

[Chandramathi S](#), [Suresh K](#), [Shuba S](#), [Mahmood A](#), [Kuppusamy UR](#).

Department of Parasitology, University Malaya, Kuala Lumpur, Malaysia.

### Abstract

**OBJECTIVE:** Numerous studies have revealed the presence of oxidative stress in parasitic infections. However, such studies were lacking in the Malaysian population. Previously, we have provided evidence that oxidative stress is elevated in Malaysians infected with intestinal parasites. Stool examinations revealed that about 47.5% of them were infected with the polymorphic protozoa, *Blastocystis hominis*. However, they were found to have mixed infection with other intestinal parasites.

**METHODOLOGY:** Therefore, in order to investigate the role of *B. hominis* alone in affecting oxidative stress status, here we compared the levels of oxidative stress biomarkers in urine and blood samples between uninfected and *B. hominis*-infected rats. Results: Infected rats exhibited elevated levels of oxidative indices namely advanced oxidative protein products (AOPP), hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and lipid hydroperoxide (LHP) indicating that their overall oxidative damage level was higher. Ferric reducing antioxidant power (FRAP) was elevated at the initial stage of infection but decreased significantly during the last week of study duration suggesting that the antioxidant status of the host may be overwhelmed by oxidative damage.

**CONCLUSION:** To date, this is the first comprehensive in vivo study to provide evidence for *Blastocystis* infection to correlate with significant oxidative burst leading to oxidative stress.

PMID: 19961647 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

[Parasitol Res.](#) 2010 Mar;106(4):941-5. Epub 2010 Feb 18.

16. **Solubilized antigen of *Blastocystis hominis* facilitates the growth of human colorectal cancer cells, HCT116.**

[Chandramathi S](#), [Suresh K](#), [Kuppusamy UR](#).

Department of Parasitology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

### Abstract

*Blastocystis hominis* is one of the most common intestinal protozoan parasites in humans, and reports have shown that blastocystosis is coupled with intestinal disorders. In the past, researchers have developed an in vitro model using *B. hominis* culture filtrates to investigate its ability in triggering inflammatory cytokine responses and transcription factors in human colonic epithelial cells. Studies have also correlated the inflammation by parasitic infection with cancer. The present study provides evidence of the parasite facilitating cancer cell growth through observing the cytopathic effect, cellular immunomodulation, and apoptotic responses of *B. hominis*, especially in malignancy. Here we investigated the effect of solubilized antigen from *B. hominis* on cell viability, using peripheral blood mononuclear cells (PBMCs) and human colorectal carcinoma cells (HCT116). The gene expressions of cytokines namely interleukin 6 (IL-6), IL-8, tumor necrosis factor alpha, interferon gamma, nuclear factor kappa light-chain enhancer of activated B cells (a gene transcription factor), and proapoptotic genes namely protein 53 and cathepsin B were also studied. Results exhibited favor the fact that antigen from *B. hominis*, at a certain concentration, could facilitate the growth of HCT116 while having the ability to downregulate immune cell responses (PBMCs). Therefore, there is a vital need to screen colorectal cancer patients for *B. hominis* infection as it possesses the ability to enhance the tumor growth.

PMID: 20165878 [PubMed - indexed for MEDLINE]



### MeSH Terms, Substances

[Tunis Med.](#) 2010 Mar;88(3):190-2.

17. **[Clinical and epidemiological characteristics of blastocystis hominis].**

[Article in French]

[Trabelsi S](#), [Ali IB](#), [Khaled S](#).

Laboratoire de Parasitologie-Mycologie--Hôpital Charles Nicolle, Tunis.

### Abstract

**BACKGROUND:** *Blastocystis hominis* is an intestinal parasite known since long. It is cosmopolitan and lives in the colon. It is still the subject of controversy regarding its pathogenicity and possibly opportunistic character.

**AIM:** We exhibit in this article the results obtained for 4 years on the epidemiological, clinical and biological character

and opportunistic *Blastocystis hominis*, often overlooked in the examination of parasitological laboratories city.

**METHODS:** This is a retrospective study of 3257 stool examination (PSE), performed in the Mycology Laboratory of Parasitology of the Charles Nicolle Hospital in Tunis over a period of 4 years (January 2005-December 2008). Detection of *Blastocystis hominis* has been made by microscopic examination of samples by direct examination and concentration.

**RESULTS:** *Blastocystis* was found in 7.27% of cases and 48.5% in men. *Endolimax nana* is the parasite most frequently associated with *Blastocystis* (40.4% of cases). The port was symptomatic in 72.1% of cases, diarrhea is the symptom most often found (27.7%). There is a seasonal distribution; in fact, it is more frequently diagnosed in summer and autumn.

**CONCLUSION:** The absence of gravity and the saprophytic nature of this infection do not lead to an indication for treatment even among profoundly immunosuppressed individuals. Only the persistence of clinical disorders associated with the detection of the parasite and in the absence of other micro-organisms and intestinal parasites justifies the treatment. Metronidazole is the molecule used conventionally.

PMID: 20415193 [PubMed - indexed for MEDLINE] [Free full text](#)



### Publication Types, MeSH Terms

Am J Clin Pathol. 2010 Feb;133(2):251-8.

18. [Differences in clinical significance and morphologic features of \*Blastocystis\* sp subtype 3.](#)

Vassalos CM, Spanakos G, Vassalou E, Papadopoulou C, Vakalis N.

Department of Parasitology, Entomology and Tropical Diseases, National School of Public Health, Athens, Greece.

#### Abstract

*Blastocystis* is a polymorphic intestinal parasite that is common in humans. A total of 51 asymptomatic and symptomatic patients positive for *Blastocystis* only were included in the study. Symptoms were mainly nonspecific gastrointestinal symptoms. *Blastocystis* isolates were xenically cultured and subtyped. *Blastocystis* species subtype 3 was the predominant subtype. Intrasubtype differences (vacuolar/amoeboid presence) in subtype 3 morphotypes were observed in 32 asymptomatic and symptomatic subtype 3 cases and could possibly be related to *Blastocystis* pathogenic potential. Diverse morphologic features (vacuolar transiting to amoeboid), probably reflecting the progression from an asymptomatic to a symptomatic state, were observed in an asymptomatic subtype 3 carrier who later had symptoms. Searching for amoeboid forms might be helpful to presumptively screen symptomatic patients with subtype 3 or to follow up an asymptomatic subtype 3 carrier in case symptoms become evident before antiprotozoal treatment was attempted. Further studies on the roles of morphologic features and variation within *Blastocystis* species subtypes as predictors of symptoms are encouraged.

PMID: 20093234 [PubMed - indexed for MEDLINE] [Free full text](#)



### Publication Types, MeSH Terms, Substances

Digestion. 2010;82(1):18-23. Epub 2010 Feb 9.

19. [Intestinal protozoa infections among patients with ulcerative colitis: prevalence and impact on clinical disease course.](#)

Yamamoto-Furusho JK, Torijano-Carrera E.

Inflammatory Bowel Disease Clinic, Department of Gastroenterology, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico. kazuofurusho@hotmail.com

#### Abstract

**BACKGROUND:** Epidemiological and microbiologic studies suggest that enteropathogenic microorganisms play a substantial role in the clinical initiation and relapses of inflammatory bowel disease.

**AIM:** To explore the prevalence of intestinal protozoa in patients with ulcerative colitis (UC) and its impact on clinical disease course.

**METHODS:** A total of 215 patients with definitive diagnosis of UC were studied. Fresh feces samples taken from all UC patients were examined immediately using trichrome-staining methods.

**RESULTS:** A total of 103 female and 112 male UC patients were analyzed. The mean age at diagnosis was 30.5 +/- 10.8 years. The prevalence of overall parasitic infections was 24% and distributed as follows: *Blastocystis hominis* in 22 patients (10%), *Endolimax nana* in 19 cases (9%), and *Entamoebahistolytica* in 11 cases (5%). A significantly increased frequency of protozoa infection was found in those patients with persistent activity and intermittent activity as compared to active than inactive group ( $p = 1 \times 10^{-7}$ , OR 13.05, 95% CI 4.28-42.56, and  $p = 0.003$ , OR 1.42-14.47, respectively). Interestingly, this association remained significant when we compared the persistent activity group versus intermittent activity group ( $p = 0.003$ , OR 2.97, 95% CI 1.35-6.59). Subgroup analysis showed no association between protozoa infection (*E. histolytica*, *B. hominis*, and *E. nana*) and other clinical variables such as gender, extent of disease, extraintestinal complications, medical treatment and grade of disease activity.

**CONCLUSION:** The prevalence of intestinal protozoa infections in Mexican UC patients was 24% and these microorganisms could be a contributing cause of persistent activity despite medical treatment in our population.

2010 S. Karger AG, Basel.

PMID: 20145404 [PubMed - indexed for MEDLINE]



### MeSH Terms

■ [Epidemiol Infect.](#) 2009 Nov;137(11):1655-63. Epub 2009 Apr 27.

20.

### **Blastocystis: unravelling potential risk factors and clinical significance of a common but neglected parasite.**

Stensvold CR, Lewis HC, Hammerum AM, Porsbo LJ, Nielsen SS, Olsen KE, Arendrup MC, Nielsen HV, Mølbak K. Department of Bacteriology, Mycology and Parasitology, Statens Serum Institut, Copenhagen, Denmark. RUN@ssi.dk

#### Abstract

Two independent studies were conducted to describe symptoms and potential risk factors associated with *Blastocystis* infection. Isolates were subtyped by molecular analysis. In the NORMAT study (126 individuals randomly sampled from the general population) 24 (19%) were positive for *Blastocystis*. *Blastocystis* was associated with irritable bowel syndrome ( $P=0.04$ ), contact with pigs ( $P<0.01$ ) and poultry ( $P=0.03$ ). In the Follow-up (FU) study (follow-up of 92 *Blastocystis*-positive patients), reports on bloating were associated with subtype (ST) 2 ( $P<0.01$ ), and blood in stool to mixed subtype infection ( $P=0.06$ ). ST1 was more common in FU individuals (32%) than in NORMAT individuals (8%), whereas single subtype infections due to ST3 or ST4 were seen in 63% of the NORMAT cases and 28% of the FU cases. Only FU individuals hosted ST7, and ST6/7 infections due to ST7 or ST9 were characterized by multiple intestinal symptoms. The data indicate subtype-dependent differences in the clinical significance of *Blastocystis*.

PMID: 19393117 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

■ [Parasitol Res.](#) 2009 Oct;105(4):1007-13. Epub 2009 Jun 2.

21.

### **Blastocystis hominis infection in long-term care facilities in Taiwan: prevalence and associated clinical factors.**

Su FH, Chu FY, Li CY, Tang HF, Lin YS, Peng YJ, Su YM, Lee SD.

Department of Family Medicine, Far Eastern Memorial Hospital, Pan-Chiao, Taipei Hsien, Taiwan. williamsufh@gmail.com

#### Abstract

*Blastocystis hominis* is probably the most common protozoan found in the human gut worldwide. In Taiwan, the prevalence of *B. hominis* infection is yet to be determined but is expected to be relatively higher among foreign workers. No data is available on the prevalence of *B. hominis* infection in long-term care facilities in Taiwan. This study included 713 subjects (552 residents and 161 care workers) from ten long-term care facilities in Taiwan who completed stool microscopic examinations with Merthiolate-iodine-formalin stain technique. The prevalence rate of blastocystosis was the highest among foreign and domestic care workers followed by residents (12.2%, 4.6%, and 2.7%, respectively). Older age ( $p = 0.04$ ) and lower educational level ( $p = 0.008$ ) were significantly associated with blastocystosis among care workers. Among residents, *B. hominis* infection was negatively associated with prolonged use of antibiotics within 3 months prior to examination ( $p = 0.05$ ) and positively associated with tracheostomy in-place ( $p = 0.028$ ). In conclusion, *B. hominis* infection was the most prevalent intestinal parasitic infection among both care

workers and residents of long-term care facilities in Taiwan. Use of antibiotics was negatively associated with *B. hominis* infection among residents. Additionally, appropriate preventive measures should be implemented to older care workers with lesser educational attainment in order to reduce the risk of blastocystosis infection.

PMID: 19488784 [PubMed - indexed for MEDLINE]



### MeSH Terms

[Parasitol Res.](#) 2009 Oct;105(4):949-55. Epub 2009 May 27.

22. **High prevalence of subtype 4 among isolates of *Blastocystis hominis* from symptomatic patients of a health district of Valencia (Spain).**

[Domínguez-Márquez MV](#), [Guna R](#), [Muñoz C](#), [Gómez-Muñoz MT](#), [Borrás R](#).  
Servicio de Microbiología, Hospital Universitario de La Ribera, Alzira 46600, Spain.

### Abstract

In order to know the genetic diversity of *Blastocystis hominis* from a health district of Valencia (Spain) 51 clinical isolates from symptomatic patients, 31 axenic and 20 monoxenic, were ribotyped by analysing the restriction fragment length polymorphism (RFLP) of amplicons obtained by polymerase chain reaction (PCR) of small-subunit of ribosomal DNA genes (SSU-rDNA). For this purpose, DNA was subjected to two independent PCR (RD3-RD5, F1-R1) and to three independent treatments with restrictases (AluI, HinfI and RsaI). The digested DNA was separated electrophoretically, the isolates were clustered into ribotypes (ribodemes, RD3-RD5; subgroups, F1-R1) according to their profiles and the results were translated into genetic subtypes (ST) proposed by a consensus terminology. The results show that the isolates studied are an heterogeneous population and that both PCR-RFLP SSU-rDNA protocols have a similar discriminative power, since it allowed the ribotyping of all isolates and their clustering into four demes: ribodemes 1, 3 and 3-r and 6, which include isolates belonging to subgroup III, IV, V and V-r, respectively; which were assigned to ST1 (2%), ST2 (3.9%) and ST4 (94.1%). The most common of which is a zoonotic subtype (*Blastocystis ratti*) which includes, according to recent studies, non-pathogenic and pathogenic variants.

PMID: 19471964 [PubMed - indexed for MEDLINE]



### MeSH Terms, Substances

[Mem Inst Oswaldo Cruz.](#) 2009 Aug;104(5):724-7.

23. **Blastocystis subtypes in irritable bowel syndrome and inflammatory bowel disease in Ankara, Turkey.**

[Dogruman-AI F](#), [Kustimur S](#), [Yoshikawa H](#), [Tuncer C](#), [Simsek Z](#), [Tanyuksel M](#), [Araz E](#), [Boorum K](#).

Department of Microbiology and Clinical Microbiology, Gazi University School of Medicine, Besevler, Ankara, Turkey.  
alfunda@gazi.edu.tr

### Abstract

*Blastocystis* infection has been reported to be associated with irritable bowel syndrome (IBS), inflammatory bowel disease (IBD) and chronic diarrhoea. The availability of data on the subtypes of *Blastocystis* found in these patient groups would be of interest in understanding the significance of *Blastocystis* infection in chronic illness. In this study, we identify *Blastocystis* subtypes found in patients presenting with IBS, IBD, chronic diarrhoea and asymptomatic patients in Ankara, Turkey. *Blastocystis* was detected in 11 symptomatic patients by microscopy and 19 by stool culture. Stool culture was more sensitive than microscopy in identifying *Blastocystis*. Using standard nomenclature adopted in 2007, *Blastocystis* sp. subtype 3 was the most common in all groups, followed by *Blastocystis* sp. subtype 2. Identical subtypes of *Blastocystis* are found in patients with IBS, IBD and chronic diarrhoea. These particular subtypes show low host specificity and are carried by humans and some farm animals. The subtypes of *Blastocystis* that are commonly found in rodents and certain wild birds were not found in these patients. We suggest a model in which the severity of enteric protozoan infection may be mediated by host factors.

PMID: 19820833 [PubMed - indexed for MEDLINE] [Free full text](#)

free full text available at [SciELO.org](#)

**Publication Types, MeSH Terms, Substances**

■ [Parasitology](#). 2009 Mar;136(3):359-63. Epub 2009 Jan 21.

24. **Elevated levels of urinary hydrogen peroxide, advanced oxidative protein product (AOPP) and malondialdehyde in humans infected with intestinal parasites.**

Chandramathi S, Suresh K, Anita ZB, Kuppusamy UR.

Department of Parasitology, University Malaya, Kuala Lumpur, Malaysia.

**Abstract**

Oxidative stress has been implicated as an important pathogenic factor in the pathophysiology of various life-threatening diseases such as cancer, cardiovascular diseases and diabetes. It occurs when the production of free radicals (generated during aerobic metabolism, inflammation, and infections) overcome the antioxidant defences in the body. Although previous studies have implied that oxidative stress is present in serum of patients with parasitic infection there have been no studies confirming oxidative stress levels in the Malaysian population infected with intestinal parasites. Three biochemical assays namely hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), lipid peroxidation (LP) and advanced oxidative protein product (AOPP) assays were carried out to measure oxidative stress levels in the urine of human subjects whose stools were infected with parasites such as *Blastocystis hominis*, *Ascaris*, *Trichuris*, hookworm and microsporidia. The levels of H<sub>2</sub>O<sub>2</sub>, AOPP and LP were significantly higher (P<0.001, P<0.05 and P<0.05 respectively) in the parasite-infected subjects (n=75) compared to the controls (n=95). In conclusion, the study provides evidence that oxidative stress is elevated in humans infected by intestinal parasites. This study may influence future researchers to consider free radical-related pathways to be a target in the interventions of new drugs against parasitic infection and related diseases.

PMID: 19154644 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Substances**

■ [Parasitol Res](#). 2009 Jan;104(2):341-5. Epub 2008 Oct 16.

25. **Association of Blastocystis subtype 3 and 1 with patients from an Oregon community presenting with chronic gastrointestinal illness.**

Jones MS, Whipps CM, Ganac RD, Hudson NR, Boorom K.

Clinical Investigation Facility, David Grant USAF Medical Center, 101 Bodin Circle, Travis AFB, Fairfield, CA 94535, USA. drmorrisj@yahoo.com

**Erratum in**

[Parasitol Res](#). 2009 Jan;104(2):491. Boroom, Kenneth [corrected to Boorom, Kenneth].

**Abstract**

Chronic gastrointestinal illness of unknown etiology is a significant problem in the United States. Using a real-time LightCycler PCR assay we detected *Blastocystis* in nine patients from a metropolitan area of Corvallis, Oregon who presented with diarrhea, abdominal pain, fatigue, joint pain, skin rash and psychiatric co-morbidity. Phylogenetic analysis identified six infections with *Blastocystis* sp. subtype 3, and one with subtype 1, using the standard Stensvold nomenclature. Most patients with subtype 3 had previously tested negative with conventional parasitological diagnostics, had been symptomatic for over 4 years, and reported antibiotic failure.

PMID: 18923844 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Substances**

■ [Turkiye Parazitol Derg](#). 2009;33(4):270-2.

26. **[The effect of trimethoprim-sulfamethoxazole in Blastocystis hominis infection].**

[Article in Turkish]

Ertuğ S, Dost T, Ertabaklar H, Gültekin B.

Anhan Menderes Universitesi Tip Fakültesi, Parazitoloji Anabilim Dalı, Aydin, Turkey.

**Abstract**

The aim of this study was to investigate clinical findings and the effects of trimethoprim-sulfamethoxazole (TMP-SMX) in cases of blastocystosis. A total of 37 cases whose stool specimens were sent to the parasitology laboratory from the outpatient clinics of our hospital for various reasons were included in the study. Only five or more *Blastocystis hominis* were found during examination with direct wet mount using the 40x objective. The stool specimens were tested for other agents (*Salmonella* spp., *Shigella* spp., *Escherichia coli* H157:07, rotavirus) and cases with one of these were excluded from the study. The cases with blastocystosis were given TMP-SMX for 7 days. After the treatment, the cases were questioned as to symptoms once again, the stool specimen examinations were repeated with the same methods, and the results were evaluated. In 34 (91.89%) out of the 37 cases where *B. hominis* was found, various clinical symptoms such as stomach ache, flatulence, diarrhea, itching and fever were observed singly and/or together. After the treatment it was found that 36 (97.3%) out of 37 cases improved. This study supports the premise that TMP-SXT is effective in the treatment of *B. hominis*.

PMID: 20101575 [PubMed - indexed for MEDLINE] [Free full text](#)

**Publication Types, MeSH Terms, Substances**

[Parasitol Res.](#) 2008 Dec;104(1):85-93. Epub 2008 Sep 16.

27. **Phenotypic and genotypic characterisation of *Blastocystis hominis* isolates implicates subtype 3 as a subtype with pathogenic potential.**

[Tan TC](#), [Suresh KG](#), [Smith HV](#).

Department of Parasitology, University of Malaya, Kuala Lumpur, Malaysia.

**Abstract**

Despite frequent reports on the presence of *Blastocystis hominis* in human intestinal tract, its pathogenicity remains a matter of intense debate. These discrepancies may be due to the varying pathogenic potential or virulence of the isolates studied. The present study represents the first to investigate both phenotypic and genotypic characteristics of *B. hominis* obtained from symptomatic and asymptomatic individuals. Symptomatic isolates had a significantly greater size range and lower growth rate in Jones' medium than asymptomatic isolates. The parasite cells of symptomatic isolates exhibited rougher surface topography and greater binding affinity to *Canavalia ensiformis* (ConA) and *Helix pomatia* (HPA). The present study also identifies further phenotypic characteristics, which aided in differentiating the pathogenic forms from the non-pathogenic forms of *B. hominis*. *Blastocystis* subtype 3 was found to be correlated well with the disease.

PMID: 18795333 [PubMed - indexed for MEDLINE]

**MeSH Terms, Substances**

[Parasit Vectors.](#) 2008 Oct 21;1(1):40.

28. **Oh my aching gut: irritable bowel syndrome, *Blastocystis*, and asymptomatic infection.**

[Boorom KF](#), [Smith H](#), [Nimri L](#), [Viscogliosi E](#), [Spanakos G](#), [Parker U](#), [Li LH](#), [Zhou XN](#), [Ok UZ](#), [Leelayoova S](#), [Jones MS](#).

*Blastocystis* Research Foundation, 5060 SW Philomath Blvd, #202, Corvallis, OR 97333, USA. [director@bhomcenter.org](mailto:director@bhomcenter.org).

**Abstract**

ABSTRACT: *Blastocystis* is a prevalent enteric protozoan that infects a variety of vertebrates. Infection with *Blastocystis* in humans has been associated with abdominal pain, diarrhea, constipation, fatigue, skin rash, and other symptoms. Researchers using different methods and examining different patient groups have reported asymptomatic infection, acute symptomatic infection, and chronic symptomatic infection. The variation in accounts has led to disagreements concerning the role of *Blastocystis* in human disease, and the importance of treating it. A better understanding of the number of species of *Blastocystis* that can infect humans, along with realization of the limitations of the existing clinical laboratory diagnostic techniques may account for much of the disagreement. The possibility that disagreement was caused by the emergence of particular pathogenic variants of *Blastocystis* is discussed, along with the potential role of *Blastocystis* infection in irritable bowel syndrome (IBS). Findings are discussed concerning the role of protease-activated receptor-2 in enteric disease which may account for the presence of abdominal pain and diffuse symptoms in *Blastocystis* infection, even in the absence of fever and endoscopic findings. The availability of

better diagnostic techniques and treatments for Blastocystis infection may be of value in understanding chronic gastrointestinal illness of unknown etiology.

PMID: 18937874 [PubMed - in process] PMCID: PMC2627840 [Free PMC Article](#)



[Vet Ital.](#) 2008 Oct-Dec;44(4):679-84.

29. **Blastocystosis: an emerging or re-emerging potential zoonosis?**

[Vassalos CM](#), [Papadopoulou C](#), [Vakalis NC](#).

Department of Microbiology, Medical School, University of Ioannina, Dourouti University Campus, Ioannina, Greece.  
connmiva@hotmail.com

**Abstract**

Blastocystis sp. is an intestinal protozoa that was formerly recognised as a yeast. However, it has since been classified in the Stramenopile Kingdom. In addition to being observed in humans, the disease has been diagnosed in a wide range of animals (mammals, amphibians, birds, reptiles and arthropods). Extensive genetic heterogeneity has been demonstrated. Blastocystis sp. subtypes 1 to 9 were recently considered to be of zoonotic origin. While some suggested that Blastocystis might play a pathogenic role in intestinal disorders in humans, others reported that there was no correlation. Furthermore, amoeboid forms of Blastocystis might be implicated in pathogenesis. In spite of recent reports, earlier data on the prevalence of the parasite suggest that blastocystosis could have occurred sporadically or continuously in the past. It might be speculated that in cases of zoonotic genotypes producing amoeboid forms, Blastocystis sp. infection might rather be considered a potential re-emerging zoonosis.

PMID: 20411495 [PubMed] [Free full text](#)



[Parasitol Int.](#) 2008 Sep;57(3):300-6. Epub 2008 Feb 13.

30. **Molecular epidemiology of Blastocystis infections in Turkey.**

[Ozyurt M](#), [Kurt O](#), [Mølbak K](#), [Nielsen HV](#), [Haznedaroglu T](#), [Stensvold CR](#).

Department of Microbiology and Clinical Microbiology, Gülhane Military Medical Academy, Haydarpasa Training Hospital, Usküdar, Istanbul, Turkey.

**Abstract**

Blastocystis is a very common unicellular intestinal parasite of ubiquitous occurrence. In order to describe the molecular epidemiology of Blastocystis infections in Turkey, 87 isolates from 69 symptomatic and 18 asymptomatic individuals were sequenced. Sequence data were phylogenetically analyzed and statistically tested against unmodifiable risk factors such as gender and age. Blastocystis-positive males were complaining mainly of gastroenteritis, whereas dyspepsia was the chief complaint among Blastocystis-positive females. Blastocystis sp. subtypes detected in the study included subtypes 1, 2, 3 and 4, subtype 3 being the most predominant (75.9%). No association was detected between Blastocystis sp. subtype and symptoms ( $p>0.365$ ), or between infection intensity and symptoms ( $p>0.441$ ). There was a tendency of subtype 2 isolates being more common among older study individuals, and subtype 2 isolates were significantly associated with higher parasite abundance ( $p=0.017$ ). Compared to data from similar studies, the distribution of Blastocystis sp. isolates in Turkey was found to more or less reflect the one seen in other countries, and it was deduced that subtype 3 is generally by far the most common subtype infecting humans, followed by subtypes 1, 2 and 4.

PMID: 18337161 [PubMed - indexed for MEDLINE]



**MeSH Terms, Substances, Secondary Source ID**

[J Egypt Soc Parasitol.](#) 2008 Aug;38(2):453-64.

31. **Protein profile and morphometry of cultured human Blastocystis hominis from children with gastroenteritis and healthy ones.**

[Hegazy MM](#), [Maklout LM](#), [El Hamshary EM](#), [Dawoud HA](#), [Eida AM](#).

Department of Clinical Parasitology, Faculty of Medicine, Mansoura University, Mansoura, Egypt.

**Abstract**

A total of 180 children of age group 5-12 years old in both sexes, of whom 90 were symptomatic and negative for other parasites, rotavirus or pathogenic bacteria. Another 90 children were asymptomatic, but with *B. hominis* in stools. Direct smear, formaline-ethyl acetate sedimentation concentration, kinyon carbol-fuchin stain, stool culture, enzyme immunoassay, culturing, morphometric study, gel electrophoresis and experimental infection of mice were done. The results showed that the central body cysts (CB), granular and multivacuolar forms isolated from symptomatic patients were larger than those from asymptomatic ones. The CB form was common compared to other forms and isolated from 104 cases. *B. hominis* infection was prevalent among males rather than females (60.5% versus 39.5%). The clinical data showed that diarrhea was the most common symptom (58.9%). The infection intensity had a direct relation with illness duration. The polyacrylamide gel electrophoresis showed that isolates from symptomatic and asymptomatic patients ranged between 24-130 kDa. All isolates showed similar banding patterns. Only minor differences were in low MW (30, 50 kDa) and in high MW (118 kDa) in samples from symptomatic patients. The histopathological examination of caecum, colon and small intestine of *B. hominis* mice infected from symptomatic patients showed infiltration with inflammatory cells and tissue invasion by the parasite.

PMID: 18853619 [PubMed - indexed for MEDLINE]

**MeSH Terms**

■ [Parasitol Res.](#) 2008 Aug;103(3):685-9. Epub 2008 Jun 5.

32.

### **A possible link between subtype 2 and asymptomatic infections of *Blastocystis hominis*.**

[Dogruman-AI F](#), [Dagci H](#), [Yoshikawa H](#), [Kurt O](#), [Demirel M](#).

Department of Medical Microbiology, Gazi University School of Medicine, Ankara, Turkey.

**Abstract**

*Blastocystis hominis* is one of the most common eukaryotic organisms in the intestinal tract of humans, while its pathogenic potential is still controversial. A total of 286 stool samples obtained from adult and pediatric patients with or without gastrointestinal symptoms in two hospitals in Manisa, Turkey, were cultured to detect *B. hominis* infection. Forty-one and 51 isolates were obtained from the adults and children, respectively, and these isolates were subjected to subtyping by polymerase chain reaction (PCR) with the known sequence-tagged site primers. The correlation between the genotype and the symptoms was evaluated. PCR subtyping indicated that subtype 3 was the most common genotype in both symptomatic and asymptomatic groups, and the second common genotype was subtypes 1 and 2 in symptomatic and asymptomatic groups, respectively. A significant correlation between subtype 2 and the asymptomatic groups was found among both in pediatric and adult patients ( $\chi^2$  (cal) = 4.38, df = 1,  $p = 0.044$ ). However, there were no significant differences between the other genotypes and the symptomatic or asymptomatic groups, as well as both the age and sex of the patients. The present study suggests that subtype 2 is a non-pathogenic genotype of *B. hominis*.

PMID: 18523804 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Substances**

■ [Eur J Haematol.](#) 2008 Jul;81(1):47-50. Epub 2008 Apr 4.

33.

### **Is *Blastocystis hominis* a new etiologic factor or a coincidence in iron deficiency anemia?**

[Yavasoglu I](#), [Kadikoylu G](#), [Uysal H](#), [Ertug S](#), [Bolaman Z](#).

Division of Hematology, Adnan Menderes University Medical Faculty, Aydin, Turkey. [dr\\_yavas@yahoo.com](mailto:dr_yavas@yahoo.com)

**Abstract**

Iron deficiency anemia (IDA) is a frequent health problem. Gut parasites such as *N. americanus* and *A. duodenale* are known to cause blood loss, but the role of *Blastocystis hominis* is uncertain. In this study, 212 patients (193 female, 19 male, mean age 41 SD 15 yrs) with IDA were enrolled and 90 persons without IDA (78 female, 12 male, mean age 45 SD 17 yrs). Microscopic examination of stools for *B. hominis* using the native lugol method was done three times on each subject. If any specimen contained five or more cysts per x400 field, the person was considered positive. *B. hominis* was found in 48 out of 212 subjects with IDA (22.6%) and in five of 90 (5.6%) subjects without IDA. This difference is highly statistically significant ( $P < 0.001$ ). Few subjects had other gut parasites and there was no statistical difference in the frequencies between IDA and non-IDA subjects. *Blastocystis hominis* may play a role in the development of IDA either on its own or in conjunction with some other agent.

PMID: 18397391 [PubMed - indexed for MEDLINE]



### MeSH Terms

[Ann Trop Med Parasitol](#). 2008 Apr;102(3):271-4.

34. **Symptomatic infection with *Blastocystis* sp. subtype 8 successfully treated with trimethoprim-sulfamethoxazole.**

Stensvold CR, Arendrup MC, Nielsen HV, Bada A, Thorsen S.

Department of Bacteriology, Mycology and Parasitology, Statens Serum Institut, Artillerivej 5, DK-2300 Copenhagen S, Denmark. run@ssi.dk

PMID: 18348782 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

[Parasitol Res](#). 2008 Apr;102(5):853-60. Epub 2008 Jan 11.

35. **Pathophysiological variability of different genotypes of human *Blastocystis* hominis Egyptian isolates in experimentally infected rats.**

Hussein EM, Hussein AM, Eida MM, Atwa MM.

Department of Parasitology, Faculty of Medicine Suez Canal University, P.O. Box 41111, Ismailia, Egypt. emanmob@hotmail.com

### Abstract

The genotyping of *Blastocystis hominis* clinical isolates obtained from 28 gastrointestinal symptomatic patients and 16 asymptomatic individuals were identified by polymerase chain reaction using sequenced-tagged site (STS) primers. Then, pathophysiological variability between different *B. hominis* genotypes was evaluated in experimentally infected rats. Only four *B. hominis* subtypes (1, 2, 3, and 4) were detected (18.2%, 9.1%, 54.5%, and 18.2%, respectively) in human isolates. In symptomatic isolates, subtypes 1, 3, and 4 were detected in 8 (28.6%), 16 (57.1%), and 4 (14.3%) patients, respectively. In asymptomatic isolates, subtypes 2, 3, and 4 were identified in 4 (25%), 8 (50%), and 4 (25%), respectively. Subtype 3 was the commonest in humans. Different degrees of pathological changes were found among infected rats by symptomatic subtypes compared with asymptomatic subtypes. The moderate and severe degrees of pathological changes were found only in symptomatic subtypes infected rats while mild degree was found only in asymptomatic subtypes infected rats. Only subtype 1 induced mortality rate with 25% among infected rats. On evaluation of the intestinal cell permeability in the Ussing chamber, a prominent increase in short circuit current ( $\Delta I_{sc}$ ) was found in symptomatic subtype 1 compared to symptomatic subtypes 3 and 4 infected rats. Minimal effects were found in the asymptomatic and control groups. The results proved that subtype 1 was clinically and statistically highly relevant to the pathogenicity of *B. hominis* while subtype 2 was irrelevant. Also, the results suggest the presence of pathogenic and nonpathogenic strains among subtypes 3 and 4.

PMID: 18193282 [PubMed - indexed for MEDLINE]



### MeSH Terms, Substances

[Eukaryot Cell](#). 2008 Mar;7(3):435-43. Epub 2007 Dec 21.

36. ***Blastocystis ratti* contains cysteine proteases that mediate interleukin-8 response from human intestinal epithelial cells in an NF-kappaB-dependent manner.**

Puthia MK, Lu J, Tan KS.

Laboratory of Molecular and Cellular Parasitology, Department of Microbiology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, 5 Science Drive 2, Singapore 117597.

### Abstract

*Blastocystis* is a ubiquitous enteric protozoan found in the intestinal tracts of humans and a wide range of animals. Evidence accumulated over the last decade suggests association of *Blastocystis* with gastrointestinal disorders

involving diarrhea, abdominal pain, constipation, nausea, and fatigue. Clinical and experimental studies have associated Blastocystis with intestinal inflammation, and it has been shown that Blastocystis has potential to modulate the host immune response. Blastocystis is also reported to be an opportunistic pathogen in immunosuppressed patients, especially those suffering from AIDS. However, nothing is known about the parasitic virulence factors and early events following host-parasite interactions. In the present study, we investigated the molecular mechanism by which Blastocystis activates interleukin-8 (IL-8) gene expression in human colonic epithelial T84 cells. We demonstrate for the first time that cysteine proteases of Blastocystis ratti WR1, a zoonotic isolate, can activate IL-8 gene expression in human colonic epithelial cells. Furthermore, we show that NF-kappaB activation is involved in the production of IL-8. In addition, our findings show that treatment with the antiprotozoal drug metronidazole can avert IL-8 production induced by B. ratti WR1. We also show for the first time that the central vacuole of Blastocystis may function as a reservoir for cysteine proteases. Our findings will contribute to an understanding of the pathobiology of a poorly studied parasite whose public health importance is increasingly recognized.

PMID: 18156286 [PubMed - indexed for MEDLINE] PMCID: PMC2268520 [Free PMC Article](#)



### Publication Types, MeSH Terms, Substances

[Acta Derm Venereol.](#) 2008;88(1):80-1.

#### 37. **Acute urticaria associated with amoeboid forms of Blastocystis sp. subtype 3.**

[Katsarou-Katsari A](#), [Vassalos CM](#), [Tzanetou K](#), [Spanakos G](#), [Papadopoulou C](#), [Vakalis N](#).

PMID: 18176765 [PubMed - indexed for MEDLINE] [Free full text](#)



### Publication Types, MeSH Terms

[Zhongguo Ji Sheng Chong Xue Yu Ji Sheng Chong Bing Za Zhi.](#) 2007 Jun;25(3):256-8.

#### 38. **[Dot enzyme-linked immunosorbent assay for detection of serum antibody to Blastocystis hominis in humans].**

[Article in Chinese]

[Su SL](#), [Yan YM](#), [Liao H](#), [Chen GF](#), [Zhang RQ](#), [Xie QJ](#), [Le X](#), [Hu YQ](#), [Zeng XY](#), [Lan HY](#), [Xie RL](#), [Huang Z](#).

Gannan Medical College, Ganzhou 341000, China.

### Abstract

Serum and stool samples were collected from 322 undergraduate students in medical school. Using stool in vitro cultivation as golden standard, 178 cases were found Blastocystis hominis positive and 144 were negative. Dot-ELISA was used to examine the serum samples with a sensitivity of 92.1% (164/178) and specificity of 97.1% (141/144). This revealed that dot-ELISA can be used for antibody detection against Blastocystis hominis.

PMID: 18038792 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms, Substances

[Rev Gastroenterol Peru.](#) 2007 Apr-Jun;27(2):191-3.

#### 39. **[Chronic angioedema and blastocystis hominis infection].**

[Article in Spanish]

[Micheloud D](#), [Jensen J](#), [Fernandez-Cruz E](#), [Carbone J](#).

Unidad de Inmunología Clínica, Servicio de Inmunología, Hospital General Universitario Gregorio Marañón, Madrid, Spain.

### Abstract

The presence of urticaria associated with Blastocystic Hominis infection has been described in very few studies. To the best of our knowledge, no cases of chronic angioedema associated with Blastocystic hominis have been published. The clinical and immunological data of a patient with said association is presented. In the last 5 years, a 21 year old woman suffered episodic spells of angioedema which affected her lips, face and upper limbs accompanied by recurring urticaria. The patient continually used antihistamines and corticoids. Laboratory and immunological tests were normal. Blastocystic hominis in faeces was identified on three occasions. The angioedema and urticaria, as well

as the intestinal infection, were successfully treated with paramomycin sulphate. The angiodema and urticaria continue in remission after 24 months of followup care. This case helps to encourage studies to establish an association between the infection by *Blastocystis hominis* and the presence of chronic angioedema which does not respond to standard treatment, as this condition can seriously affect the quality of life of sufferers.

PMID: 17712397 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms

[Haemophilia](#). 2007 Mar;13(2):224-5.

40. **Blastocystis hominis colitis in a haemophilic patient as a cause of lower gastrointestinal bleeding.**

[Lucía JF](#), [Aguilar C](#), [Betran A](#).

PMID: 17286783 [PubMed - indexed for MEDLINE]



#### Publication Types, MeSH Terms

[Int J Parasitol](#). 2007 Jan;37(1):11-20. Epub 2006 Oct 12.

41. **Irritable bowel syndrome: a review on the role of intestinal protozoa and the importance of their detection and diagnosis.**

[Stark D](#), [van Hal S](#), [Marriott D](#), [Ellis J](#), [Harkness J](#).

St. Vincent's Hospital, Department of Microbiology, Victoria St., Darlinghurst, NSW2010, Sydney, Australia.  
dstark@stvincents.com.au

#### Abstract

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder in which abdominal pain is associated with a defect or a change in bowel habits. Gut inflammation is one of the proposed mechanisms of pathogenesis. Recent studies have described a possible role for protozoan parasites, such as *Blastocystis hominis* and *Dientamoeba fragilis*, in the etiology of IBS. *Dientamoeba fragilis* is known to cause IBS-like symptoms and has a propensity to cause chronic infections but its diagnosis relies on microscopy of stained smears, which many laboratories do not perform, thereby leading to the misdiagnosis of *dientamoebiasis* as IBS. The role of *B. hominis* as an etiological agent of IBS is inconclusive, due to contradictory reports and the controversial nature of *B. hominis* as a human pathogen. Although *Entamoeba histolytica* infections occur predominately in developing regions of the world, clinical diagnosis of amebiasis is often difficult because symptoms of patients with IBS may closely mimic those patients with non-dysenteric amoebic colitis. Clinical manifestations of *Giardia intestinalis* infection also vary from asymptomatic carriage to acute and chronic diarrhoea with abdominal pain. These IBS-like symptoms can be continuous, intermittent, sporadic or recurrent, sometimes lasting years without correct diagnosis. It is essential that all patients with IBS undergo routine parasitological investigations in order to rule out the presence of protozoan parasites as the causative agents of the clinical signs.

PMID: 17070814 [PubMed - indexed for MEDLINE]



#### Publication Types, MeSH Terms

[Med Hypotheses](#). 2007;69(3):652-9. Epub 2007 Mar 26.

42. **Is this recently characterized gastrointestinal pathogen responsible for rising rates of inflammatory bowel disease (IBD) and IBD associated autism in Europe and the United States in the 1990s?**

[Boorom KF](#).

Blastocystis Research Foundation, 5060 SW Philomath Blvd, #202 Corvallis, OR 97333-1044, USA. bhom2@comcast.net

#### Abstract

In 2006, a pathogenic variant of the common intestinal organism *Blastocystis* was discovered in patients who were experiencing chronic gastrointestinal symptoms. Most species of *Blastocystis* inhabit humans with no symptoms. The

discovery of a pathogenic variant of *Blastocystis* is significant, because *Blastocystis* is related to *Entamoeba*, a similar organism with pathogenic variants that kill over 100,000 people each year. Recent research has shown that *Blastocystis* infections may be undetectable using existing clinical methods. Medical case reports from the Middle East, Europe, and United States suggest that infection with this variant may already be widespread and misdiagnosed as one of several functional disorders. **HYPOTHESIS:** A more virulent or transmissible type of *Blastocystis* emerged in the Middle East in the 1980's, and was transmitted to Europe and the United States by military and more significantly vacation and business travel. The lack of adequate tests made it impossible to detect the infection. Transmission to the larger population resulted in rising inflammatory bowel disease (IBD) rates in Europe in the 1990's. The relationship between IBD and autism is explored, along with the possibility that the same pathogen causes both conditions. **SUPPORTING DATA:** Serological and epidemiological findings are presented supporting the hypothesis. *Blastocystis* survives sewage treatment, shows low host specificity, and can be spread by many animals. Several communities which have been studied due to high autism rates are located close to rivers which receive large quantities of sewage effluent, such as South Thames (England), Olmsted County (Minnesota, USA) and many communities in Oregon (USA). **CONCLUSIONS:** Scientists from other countries represent the first line of defense against emerging infectious diseases, but their publications on *Blastocystis* are not well known in the United States and Europe. With the publication of corroborating research by Western scientists in core scientific journals, it is hoped that an appropriate response from the public health system will be forthcoming. Investigation into the existence of infection in the groups mentioned with sensitive and specific tests should be performed. Such tests could include a serum antibody test and a Polymerase Chain Reaction test specific to the pathogenic variant.

PMID: 17382484 [PubMed - indexed for MEDLINE]



### MeSH Terms

■ [Med Sci Monit.](#) 2007 Jan;13(1):CR40-3. Epub 2006 Dec 18.

#### 43. **The effect of *Blastocystis hominis* on the growth status of children.**

[Ertug S](#), [Karakas S](#), [Okuyay P](#), [Ergin F](#), [Oncu S](#).

Department of Parasitology, Adnan Menderes University Medical Faculty, Aydin-Turkey.

#### Abstract

**BACKGROUND:** *B. hominis* is a protozoan parasite commonly found in the human gastrointestinal tract. The pathogenesis of *B. hominis* is still controversial, although it is one of the most common parasites found in stool samples.

**MATERIAL/METHODS:** This study was conducted at the Adnan Menderes Medical Faculty between January 2002 and June 2003 to evaluate the relationship between *B. hominis* and growth status in children in Aydin, Turkey. Healthy children with positive stool samples for *B. hominis* but negative for other parasites were selected as the case group (n=89). Two controls matched to each case by age and gender were selected by random sampling of children with negative stool samples for any parasite (n=178).

**RESULTS:** The anthropometric measurements and body mass index were significantly lower in the case group than in the control group (p<0.05).

**CONCLUSIONS:** According to this study there is a correlation between the presence of *B. hominis* and lower anthropometric indexes in children.

PMID: 17179909 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms

■ [Türkiye Parazitoloj Derg.](#) 2007;31(4):277-82.

#### 44. **Characteristics of *Blastocystis hominis* infection in a Turkish university hospital.**

[Ozçakir O](#), [Güreser S](#), [Ergüven S](#), [Yılmaz YA](#), [Topaloğlu R](#), [Hasçelik G](#).

Hacettepe Üniversitesi, Tıp Fakültesi, Mikrobiyoloji ve Klinik Mikrobiyoloji Anabilim Dalı, Ankara, Turkey. ozcakir@hacettepe.edu.tr

#### Abstract

In order to determine characteristics of *Blastocystis* (*B.*) *hominis* infection; 770 individuals' stool specimens were examined both by simple and concentration techniques and stained with iodine solution and trichrome in the Parasitology Laboratory of Hacettepe University Faculty of Medicine, Turkey. Among the examined 770 specimens, *B.*

hominis was detected in 94 (12.2%). *B. hominis* was the most common intestinal parasite among the study group. It was mostly detected with *Dientamoeba fragilis*. Among the groups the incidence of *B. hominis* in allergic patients was higher than controls. Among the immunosuppressed patients, *B. hominis* was detected significantly higher in patients who had solid tumours. Of the 48 individuals who had only *B. hominis* in their stool the most common symptom was abdominal pain. Concentration technique with trichrome stain was more sensitive than simple smear with lugol solution for the detection of *B. hominis*. Studies with more patients must be planned to understand the *B. hominis* infection in solid tumour patients and coexistence of *B. hominis* and *D. fragilis*.

PMID: 18224616 [PubMed - indexed for MEDLINE] [Free full text](#)



### MeSH Terms

[Türkiye Parazitolojisi Dergisi](#). 2007;31(3):184-7.

#### 45. **Pathogenicity of Blastocystis hominis, a clinical reevaluation.**

[Kaya S](#), [Cetin ES](#), [Aridoğan BC](#), [Arikan S](#), [Demirci M](#).

Süleyman Demirel Üniversitesi Tıp Fakültesi, Mikrobiyoloji Anabilim Dalı, Isparta, Turkey. [selcuk@med.sdu.edu.tr](mailto:selcuk@med.sdu.edu.tr)

### Abstract

*Blastocystis* (*B.*) *hominis* was considered to be a member of normal intestinal flora in the past, but in recent years it has been accepted as a very controversial pathogenic protozoan. In this study, 52 individuals whose stool examination revealed *B. hominis* were evaluated for clinical symptoms. Metronidazole was administered for 2 weeks to the patients infected with *B. hominis*. After 2 weeks of treatment they were called for a follow-up stool examination. No other bacteriological and parasitological agents were found during stool examination of these patients. The frequency rate of intestinal symptoms was 88.4% in the *B. hominis* cases. Abdominal pain was the most frequent symptom (76.9%). Diarrhea and distention followed at a rate of 50.0% and 32.6%. Intestinal symptoms may be seen frequently together with the presence of *B. hominis* and this protozoan may be regarded as an intestinal pathogen, especially when other agents are eliminated.

PMID: 17918055 [PubMed - indexed for MEDLINE] [Free full text](#)



### MeSH Terms, Substances

[Zhongguo Ji Sheng Chong Xue Yu Ji Sheng Chong Bing Za Zhi](#). 2006 Dec;24(6):432.

#### 46. **[A case of infant infected by Blastocystis hominis].**

[Article in Chinese]

[Liu DY](#), [Lu ZC](#), [Yun X](#).

PMID: 17366972 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

[Wei Sheng Yan Jiu](#). 2006 Nov;35(6):739-42.

#### 47. **[Study on the biological characteristic of Blastocystis hominis: morphology, mode of reproduction and the relation to bacteria].**

[Article in Chinese]

[Qiao JY](#), [Zhang X](#), [Wei ZC](#), [Yang JH](#), [Li YQ](#), [Zhang R](#).

Key Laboratory of Environment and Genes Related to Diseases, Ministry of Education, Xi'an Jiaotong University, Xi'an 710061, China.

### Abstract

**OBJECTIVE:** To observe the reproductive modes of *Blastocystis hominis* and study the relation between this protozoa and bacteria.

**METHODS:** Using the Iodine and Haematoxylin staining, the morphology of *B. h* from patients and RPMI 1640 medium were observed. The *B. h* positive mucous diarrheal specimens were cultured and identified any possible known pathogenic intestinal bacteria. *B. h* and colibacillus were co-cultured to observe the interaction between them.

**RESULTS:** Four modes of reproduction for *B. h* were confirmed: binary fission, endodyogeny, multiple fission and budding. The fact that there was no other intestinal pathogens in half of the *B. h* positive specimens suggested *B. h* may cause disease independently. *B. h* and colibacillus were restrained each other.

**CONCLUSION:** *B. h* reproduces in at least four modes. *B. h* could be a pathogen and its pathogenesis may be related to micro-ecological changes.

PMID: 17290755 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

[Parasitol Res.](#) 2006 Sep;99(4):459-65. Epub 2006 Apr 21.

#### 48. **PCR fingerprinting of Blastocystis isolated from symptomatic and asymptomatic human hosts.**

[Tan TC](#), [Suresh KG](#), [Thong KL](#), [Smith HV](#).

Department of Parasitology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

#### Abstract

Genomic DNA from 16 *Blastocystis hominis* isolates comprising of eight asymptomatic isolates (A1-A8) and eight symptomatic isolates (S1-S8) was amplified by arbitrarily primed polymerase chain reaction (AP-PCR) using 38 arbitrary 10-mer primers. Six primers (A10, B5, C20, D1, F6, and F10) generated reproducible DNA fingerprints. AP-PCR amplification revealed similar DNA fingerprints among all symptomatic isolates (S1-S8) with common bands at 850 bp using primer A10, 920 bp using primer B5, and 1.3 kbp using primer D1. Isolates A1, A3, A4, A5, A6, and A7 showed similar DNA banding patterns and all asymptomatic isolates (A1-A8) shared a major band at 1 kbp using primer B5. Isolates A2 and A8 showed distinct DNA banding patterns that differed from the remainder of the isolates. The results of the phylogenetic analyses showed that all symptomatic isolates (S1-S8) formed a clade with >70% similarity among the isolates and which were clearly separate from asymptomatic isolates A1, A3, A4, A5, A6, and A7. Asymptomatic isolates A2 and A8 formed two distinct and separate clades. AP-PCR revealed higher genetic variability within the asymptomatic isolates than within the symptomatic isolates. The present study suggests that AP-PCR can be a valuable method for differentiating between isolates of *B. hominis* and our results support the hypothesis that our asymptomatic and symptomatic *B. hominis* isolates may represent two different strains/species with varying pathogenic potential.

PMID: 16628457 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

[J Pediatr Surg.](#) 2006 Aug;41(8):1489-91.

#### 49. **Blastocystis hominis--an emerging and imitating cause of acute abdomen in children.**

[Andiran N](#), [Acikgoz ZC](#), [Turkay S](#), [Andiran F](#).

Department of Pediatrics, Fatih University Hospital, 06540 Ankara, Turkey. [nandiran@gmail.com](mailto:nandiran@gmail.com)

#### Abstract

Two children aged 12 and 11 years with a similar history of abdominal pain, nausea, vomiting and fever with abdominal tenderness, and muscle guarding at the right lower quadrant for few days were admitted to our hospital. They subsequently developed diarrhea but without clinical relief. Just before the decision of laparotomy, both patients were diagnosed as having *Blastocystis hominis* infection with light microscopic examination of the stools and were treated uneventfully with the appropriate antibiotics.

#### Comment in

[J Pediatr Surg.](#) 2007 Feb;42(2):440; author reply 440-1.

PMID: 16863863 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

■ [Infect Immun.](#) 2006 Jul;74(7):4114-23.

50. **Blastocystis ratti induces contact-independent apoptosis, F-actin rearrangement, and barrier function disruption in IEC-6 cells.**

[Puthia MK](#), [Sio SW](#), [Lu J](#), [Tan KS](#).

Laboratory of Molecular and Cellular Parasitology, Department of Microbiology, Yong Loo Lin School of Medicine, National University of Singapore, 5 Science Drive 2, Singapore 117597, Singapore.

### Abstract

Blastocystis is an enteric protozoan purportedly associated with numerous clinical cases of diarrhea, flatulence, vomiting, and other gastrointestinal symptoms. Despite new knowledge of Blastocystis cell biology, genetic diversity, and epidemiology, its pathogenic potential remains controversial. Numerous clinical and epidemiological studies either implicate or exonerate the parasite as a cause of intestinal disease. Therefore, the aim of this study was to investigate the pathogenic potential of Blastocystis by studying the interactions of Blastocystis ratti WR1, an isolate of zoonotic potential, with a nontransformed rat intestinal epithelial cell line, IEC-6. Here, we report that B. ratti WR1 induces apoptosis in IEC-6 cells in a contact-independent manner. Furthermore, we found that B. ratti WR1 rearranges F-actin distribution, decreases transepithelial resistance, and increases epithelial permeability in IEC-6 cell monolayers. In addition, we found that the effects of B. ratti on transepithelial electrical resistance and epithelial permeability were significantly abrogated by treatment with metronidazole, an antiprotozoal drug. Our results suggest for the first time that Blastocystis-induced apoptosis in host cells and altered epithelial barrier function might play an important role in the pathogenesis of Blastocystis infections and that metronidazole has therapeutic potential in alleviating symptoms associated with Blastocystis.

PMID: 16790785 [PubMed - indexed for MEDLINE] PMCID: PMC1489721 [Free PMC Article](#)



### Publication Types, MeSH Terms, Substances

■ [Recenti Prog Med.](#) 2006 Jul-Aug;97(7-8):397-400.

51. **[Blastocystosis or Zierdt-Garavelli disease: a clinical pathway].**

[Article in Italian]

[Garavelli PL](#).

Struttura Complessa a Direzione Ospedaliera Malattie Infettive, Azienda Sanitaria Ospedaliera Maggiore della Carità, Novara.

### Abstract

The author presents the clinical pathway of blastocystosis, a disease due to Blastocystis hominis, an intestinal parasite that has long been enigmatic, which can occasionally be the cause of clinical manifestations.

PMID: 16913176 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

■ [Zhongguo Ji Sheng Chong Xue Yu Ji Sheng Chong Bing Za Zhi.](#) 2006 Jun;24(3):187-91.

52. **[Impact of blastocystis hominis infection on ultrastructure of intestinal mucosa in mice].**

[Article in Chinese]

[Zhang HW](#), [Li W](#), [Yan QY](#), [He LJ](#), [Su YP](#).

Department of Occupational Health, College of Public Health, Zhengzhou University, Zhengzhou 450052, China.

### Abstract

**OBJECTIVE:** To observe the ultrastructural change of intestinal mucosa in mice infected with Blastocystis hominis, and to study the pathogenic mechanism of B. hominis infection.

**METHODS:** 20 Kunming mice were randomly divided into 4 groups: group A treated with immunosuppressant (dexamethasone), group B without immunosuppressant, group C as normal control and group D as immunosuppressant control. Groups A and B were then orally infected with 20(4) cysts of B. hominis. Groups C and D were treated as control by infusing same volume of Locke's solution. Six days after inoculation, mice in each group were killed and mucosa of ileocecum was observed by transmission electron microscope (TEM) and scanning electron microscope (SEM).

**RESULTS:** Under SEM, B. hominis located in enteric cavity and on the surface of ileocecum mucosa. Individual

parasites also invaded into mucosa and its fold. Partial destruction of microvilli on the mucosa was observed. TEM observation indicated a reduction of microvilli on the surface of absorptive cells. Mitochondrial edema, rough endoplasmic reticulum dilatation and degranulation were found on absorptive cells and goblet cells. Lymphocyte infiltration and eosinophilia were found in intercellular stroma. Pathological changes in group A were more serious than that of group B. No abnormal change on the mucosal ultrastructure was found in groups C and D.

**CONCLUSIONS:** *B. hominis* infection causes significant ultrastructural lesion on the ileocecal mucosa in mice. Immune status of the mice can affect the degree of the lesion due to infection.

PMID: 17094618 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms

■ [Australas J Dermatol.](#) 2006 May;47(2):117-9.

#### 53. Chronic urticaria due to *Blastocystis hominis*.

[Gupta R](#), [Parsi K](#).

Department of Dermatology, St Vincent's Hospital, Sydney, New South Wales, Australia. [ritu1gupta@hotmail.com](mailto:ritu1gupta@hotmail.com)

#### Abstract

A 24-year-old woman had a 9-week history of second to third daily urticaria that began after an episode of contact urticaria to topical bufexamac. She was found to have an underlying gastrointestinal infection with *Blastocystis hominis*. This was thought to be clinically relevant as she had a history of mild chronic diarrhoea. After treatment of the *Blastocystis hominis*, her urticaria ceased. This could indicate the importance of performing stool microscopy and culture on all patients with chronic urticaria of unknown aetiology. The relationship of urticaria to intestinal parasites and the possibility that non-steroidal anti-inflammatory medications could act as cofactors that help precipitate an urticarial reaction is discussed.

PMID: 16637808 [PubMed - indexed for MEDLINE]



#### Publication Types, MeSH Terms, Substances

■ [Parasitol Res.](#) 2006 Feb;98(3):189-93. Epub 2005 Dec 2.

54. **Predominance of amoeboid forms of *Blastocystis hominis* in isolates from symptomatic patients.**

Tan TC, Suresh KG.

Department of Parasitology, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

**Abstract**

*Blastocystis hominis* is one of the most common human parasites that inhabit the intestinal tract. Conflicting reports continue to exist regarding the existence and the functional role of the amoeboid forms in the life cycle of the parasite. The present study investigates the presence of these forms in 20 isolates obtained from ten symptomatic and asymptomatic patients respectively. A total of 10,000 parasite cells per ml from each isolate were inoculated into three culture tubes each containing 3 ml of Jones' medium supplemented with 10% horse serum, incubated at 37 degrees C. The contents were examined daily for 10 days. Irregular and polymorphic amoeboid forms with multiple extended pseudopodia were observed in all isolates from symptomatic patients, while none of the isolates from asymptomatic patients showed the presence of the amoeboid forms. The amoeboid forms were initially noted on day 2 and the percentages increased from 2% to 28%, with peak percentages from day 3 to day 6. Transmission electron microscopy revealed two types of amoeboid forms; one containing a large central vacuole completely filled with tiny electron-dense granules, and the other which revealed multiple small vacuoles within the central body. The cytoplasm contained strands of electron-dense granules resembling rough endoplasmic reticulum, which is suggestive of active protein synthesis. The surface coat of the amoeboid form surrounding the parasite showed uneven thickness. Acridine orange stained the central body yellow and the periphery orange, indicating activity at the level of nucleic acids. The amoeboid form could either be an indicator of pathogenicity of *B. hominis*, or the form likely to contribute to pathogenicity and be responsible for the symptoms seen in patients.

PMID: 16323025 [PubMed - indexed for MEDLINE]



**Publication Types, MeSH Terms**

■ [Zhongguo Ji Sheng Chong Xue Yu Ji Sheng Chong Bing Za Zhi.](#) 2005 Dec 30;23(6):444-8.

55. **[Experimental infection of mice with *Blastocystis hominis*].**

[Article in Chinese]

Yao FR, Qiao JY, Zhao Y, Zhang X, Yang JH, Li XQ.

Department of Immunology and pathobiology, Medical School, Xi'an Jiaotong University, Xi 'an 710061, China.

**Abstract**

**OBJECTIVE:** To seek a better pathway and proper number of parasites for *Blastocystis hominis* (B.h) infection in normal and immunocompromised ICR mice.

**METHODS:** (1) 10(4), 10(5) and 10(6) B.h, cultured in RPMI 1640 medium from 3 generations were used to infect mice through oral and rectum; (2) 10(6) B.h were used to infect immunocompromised mice through rectum. The reproduction of B.h in gastrointestinal tract and the pathologic changes in the tissues were observed.

**RESULTS:** Mice were infected by B.h through either oral or rectum. The infected immunocompromised mice showed slow locomotion, depressed, lethargy, and descended body weight. Some infected mice discharged mucus feces, a few of them died during the experiment. Parasites were found in the whole gastrointestinal tract. Severe edema, hyperemia and congestion were observed in the tissues of jejunum, ileum, cecum and colon. The epithelia of small intestine and colonic mucous membrane showed exfoliation, inflammatory cell infiltration in submucosa, and structural changes in glands.

**CONCLUSION:** Mice were more susceptible to *Blastocystis hominis* infection through rectum than orally. The parasites can be found in the whole gastrointestinal tract of mice, and can breed rapidly and cause significant pathological change in the gastrointestinal mucosa in immunocompromised mice.

PMID: 16566218 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms**

■ [Parasitol Res.](#) 2005 Dec;98(1):38-43. Epub 2005 Oct 25.

56. **The association of *Blastocystis hominis* and *Endolimax nana* with diarrheal stools in Zambian school-age children.**

Graczyk TK, Shiff CK, Tamang L, Munsaka F, Beitin AM, Moss WJ.

Department of Environmental Health Sciences, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD 21205, USA.  
tgraczyk@jhsph.edu

### Abstract

To determine the prevalence of endoparasites and their association with diarrhea, a survey was conducted in the Southern Province of Zambia that used conventional and molecular techniques applied to stool and urine samples from school-age children (n = 93). Almost half of the stools (49.5%) were diarrhetic. The overall prevalence of *Endolimax nana*, *Schistosoma haematobium*, *Blastocystis hominis*, *Giardia lamblia*, *Cryptosporidium parvum*, *Encephalitozoon intestinalis*, and *Strongyloides stercoralis* was 64.3, 59.1, 53.8, 19.4, 8.6, 8.6, and 1.1%, respectively. Only the associations between infection with *B. hominis* and *E. nana* with diarrhea were statistically significant. Although *B. hominis* and *E. nana* are considered to be nonpathogenic organisms, this study demonstrated that they can be associated with diarrhea in children when they occur at high prevalence and intensity. This survey supports the recent evidence that *B. hominis* and *E. nana* infections are associated with deficient sanitation and low hygiene standards and can contribute to diarrhea in children in developing countries.

PMID: 16249910 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms

■ [Clin Gastroenterol Hepatol.](#) 2005 Oct;3(10):987-91.

#### 57. **Effect of nitazoxanide in persistent diarrhea and enteritis associated with *Blastocystis hominis*.**

Rossignol JF, Kabil SM, Said M, Samir H, Younis AM.

The Romark Institute for Medical Research, Tampa, Florida 33607, USA. jrossignol@romark.com

### Abstract

**BACKGROUND & AIMS:** The aim of this study was to evaluate the efficacy of nitazoxanide for the treatment of diarrhea and enteritis associated with *Blastocystis hominis* as the sole identified pathogen in children and adults from the Nile delta of Egypt.

**METHODS:** Two prospective, randomized, double-blind, placebo-controlled studies were conducted. Nitazoxanide 500 mg (as a 500-mg tablet) was administered twice daily for 3 days in patients aged 12 years or older, 200 mg (as 10 mL of an oral suspension) was administered twice daily for 3 days in patients aged 4-11 years, and 100 mg (as 5 mL of an oral suspension) was administered twice daily for 3 days in patients aged 1-3 years.

**RESULTS:** Four days after the completion of therapy, 36 (86%) of the 42 patients who received nitazoxanide showed resolution of symptoms compared with 16 (38%) of 42 patients who received placebo (P<.0001). Thirty-six (86%) of the 42 patients who received nitazoxanide were free of *B hominis* organisms in each of 3 posttreatment stool samples compared with only 5 (12%) of 42 patients who received placebo (P<.0001). Response rates in patients receiving the tablets and the suspension were identical.

**CONCLUSIONS:** These findings suggest that *B hominis* is pathogenic in some patients and can be treated effectively with nitazoxanide. Alternatively, the possibility that nitazoxanide is effective in treating other unidentified causes of persistent diarrhea and enteritis warrants further study.

PMID: 16234044 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

■ [J Egypt Soc Parasitol.](#) 2005 Aug;35(2):653-66.

#### 58. ***Blastocystis hominis* among symptomatic and asymptomatic individuals in Talkha Center, Dakahlia Governorate, Egypt.**

El-Shazly AM, Abdel-Magied AA, El-Beshbishi SN, El-Nahas HA, Fouad MA, Monib MS.

Department of Parasitology, Faculty of Medicine, University of Mansoura, Mansoura, Egypt.

### Abstract

*Blastocystis hominis* is now getting acceptance as an agent of human intestinal disease. *B. hominis* in stool samples of symptomatic and asymptomatic individuals was evaluated as a possible cause of gastro-intestinal troubles. *B.*

hominis was found in 106 (10.1%) out of 1050 individuals examined from six villages and one city in Talkha Center, Dakahlia Governorate. The highest infection rate was in Manshayt El-Badawy village (25.47%), whereas Talkha City showed the lowest rate (4.73%). Age group 10-20 years had higher infection (13.3%). In twenty-three symptomatic patients, *B. hominis* represented the only causative parasitic agent. The most common symptoms were diarrhoea (30.4%), abdominal pain (26.1%), flatulence (21.7%), vomiting (13.1%) and fatigue (8.7%). High concentrations of *B. hominis* were found in symptomatic patients than in asymptomatic ones with statistical significant difference (8.2 cells/100 x field versus 3.8 respectively). The mean number of *B. hominis* was significantly high in patients complaining of diarrhoea and abdominal pain.

PMID: 16083074 [PubMed - indexed for MEDLINE]

### MeSH Terms

■ [Parasitol Res.](#) 2005 Jun;96(4):273-5. Epub 2005 May 25.

59. **Blastocystis hominis and the evaluation of efficacy of metronidazole and trimethoprim/sulfamethoxazole.**

Moghaddam DD, Ghadirian E, Azami M.

Department of Parasitology and Mycology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran.  
moghaddam@med.mui.ac.ir

### Abstract

*Blastocystis hominis* is commonly found in the intestinal tract of humans. Although the pathogenicity of this unicellular parasite is controversial, anti-protozoan agents are usually administered to infected individuals. At present, the first choice of chemotherapeutic agent is Metronidazole as described in the literature. In this study, we evaluated the effects of metronidazole and Trimethoprim/Sulfamethoxazole (TMP/SMX) on persons infected with *B. hominis*. A total of 104 subjects infected with *B. hominis* were admitted to the laboratory from 2002 to 2003. All individuals were non-immunocompromised and subjects were monitored for 1 year after treatment. All stool samples were microscopically examined after staining with iodine and by culturing in an egg slant medium. Of the 104 infected individuals (52+/-16 years of age, M:F=60:44) with *B. hominis* infection, 28 were discharging large numbers of parasites before treatment. Of 28 severely infected individuals, 12 were treated with metronidazole/250-750 mg at a regimen of 3 x/day/10 days and 4 of the 12 were eradicated. Nine individuals were treated with TMP/SMX/1 tab at a regimen of 3 x/day/10 days and 2 of the 9 were eradicated. For severe *B. hominis* infections, it appears that metronidazole and TMP/SMX are effective in some individuals, but not all.

PMID: 15915364 [PubMed - indexed for MEDLINE]



### MeSH Terms, Substances

■ [Acta Derm Venereol.](#) 2005;85(4):357-8.

60. **Remission of delayed pressure urticaria after eradication of Blastocystis hominis.**

Cassano N, Scoppio BM, Loviglio MC, Vena GA.

PMID: 16191864 [PubMed - indexed for MEDLINE] [Free full text](#)



### Publication Types, MeSH Terms, Substances

■ [Rev Med Chir Soc Med Nat Iasi.](#) 2005 Jan-Mar;109(1):140-3.

61. **[Epidemiologic and laboratory assessments of etiologic implications of Blastocystis hominis in gastrointestinal diseases].**

[Article in Romanian]

Luca M, Ivan A, Goția S, Cașotă RE, Danciu V.

Universitatea de Medicina și Farmacie Gr T Popa Iași, Facultatea de Medicină, Disciplina de Parazitologie.

### Abstract

Authors present the first laboratory and epidemiological results which reveal the circulation in a population of

protozoan *Blastocystis hominis* and its implication in the determinations of some gastrointestinal troubles, with fever, diarrhea and constipation, intense intestinal meteorism, associated with abdominal pain and cramps. Out of the 3106 investigated patients, 9.7% presented *B. hominis* as a unique etiologic agent, with an increased prevalence in adults (74.3%) and women (65.3%). *Blastocystis* infection with clinical manifestations or its asymptomatic form is included among emergent diseases.

PMID: 16607843 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms, Substances

- [Türkiye Parazitoloj Derg. 2005;29\(4\):229-231.](#)

#### 62. **Clinical symptoms in cases caused by entamoeba coli and blastocystis hominis.**

[Article in Turkish]

Kaya S, Cetin ES, Akçam Z, Kesbiç H, Demirci M.

Süleyman Demirel Üniversitesi Tıp Fakültesi 1Mikrobiyoloji ve Klinik Mikrobiyoloji Anabilim Dalı, Isparta, Turkey.

#### Abstract

*E. coli* and *B. hominis* are usually accepted as members of normal intestinal flora during stool examinations, but in recent years there has been controversy as to whether they may be pathogen protozoa. In this study, 92 individuals who were found to have *E. coli* (58/92) and *B. hominis* (34/92) in their stools were included in a study of clinical symptoms. No other parasitological or bacteriological agents were found in the stools of these persons. The percentages of intestinal symptoms were found to be 67.2% and 79.4% for *E. coli* and *B. hominis*, respectively. As a result of these findings we concluded that intestinal symptoms may be seen frequently if *E. coli* and *B. hominis* are present. In conclusion, *E. coli* and *B. hominis* may be considered to be pathogens, especially when no other agents are present.

PMID: 17124674 [PubMed - as supplied by publisher] [Free full text](#)



- [Am J Trop Med Hyg. 2004 Jun;70\(6\):658-62.](#)

#### 63. **Evidence of waterborne transmission of Blastocystis hominis.**

Leelayoova S, Rangsin R, Taamasri P, Naaglor T, Thathaisong U, Mungthin M.

Department of Parasitology, Phramongkutkiao College of Medicine, Ratchathewi, Bangkok, Thailand.

#### Abstract

A cross-sectional study was performed in February 2001 to evaluate the prevalence and risk factors of *Blastocystis hominis* infection in army personnel who resided in an army base in Chonburi, Thailand. A total of 904 army personnel were enrolled in this study. Short-term in vitro cultivation was used to detect *B. hominis* in stool samples. In this population, *B. hominis* was the parasite most frequently found, and was identified in 334 of 904 stool specimens (36.9%). A significant association between *B. hominis* infection and symptoms was identified that might emphasize the role of *B. hominis* as a human pathogen. After adjustment for potential confounders, significantly increased risk of being infection with *B. hominis* was associated with being a private, working in a specific unit, and consuming unboiled drinking water. Thus, waterborne transmission of *B. hominis* infection was indicated at this army base. However, other modes of transmission cannot be ruled out.

PMID: 15211009 [PubMed - indexed for MEDLINE] [Free full text](#)



### Publication Types, MeSH Terms

- [Eur J Clin Microbiol Infect Dis. 2004 May;23\(5\):399-402. Epub 2004 Apr 27.](#)

#### 64. **Blastocystis hominis as a cause of hypoalbuminemia and anasarca.**

Nassir E, Awad J, Abel AB, Khoury J, Shay M, Lejbkowitz F.

Department of Internal Medicine, Western Galilee Hospital, Nahariya, Israel.

#### Abstract

The protozoan *Blastocystis hominis* has been considered nonpathogenic, but this classification has come under

scrutiny in light of reports in the medical literature indicating it could be the cause of intestinal disorders and, in one case, hypoalbuminemia. Reported here is a severe case of infection with *B. hominis* that caused acute gastroenteritis with prolonged diarrhea, hypoalbuminemia and anasarca. The diagnosis was based on the parasitological finding, since no other pathological evidence was found. The patient responded favorably to treatment with metronidazole for 10 days. This case supports the idea that *B. hominis* should be considered as a cause of opportunistic infection in debilitated patients despite the controversy surrounding its pathogenicity.

PMID: 15112065 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

■ [Eur Rev Med Pharmacol Sci. 2004 May-Jun;8\(3\):117-20.](#)

#### 65. **Chronic urticaria and blastocystis hominis infection: a case report.**

[Pasqui AL](#), [Savini E](#), [Saletti M](#), [Guzzo C](#), [Puccetti L](#), [Auteri A](#).

Department of Internal Medicine and Immunology, University of Siena (Italy).

#### Abstract

We report a case of a 45 year old woman which fulfilled the criteria of chronic urticaria (remitting and relapsing bouts of erythematous and pruriginous lesions without angioedema, lasted four months). Cutaneous manifestations were not related to a specific inducing factor, had no benefit from antihistamine and steroid drugs and were associated sometimes with mild gastroenteric disorders. Patient was submitted to extensive clinical, laboratory and instrumental investigations which permit to exclude many conditions: allergy to inhalants, food, insects and drug adverse reactions, autoimmune urticaria, autoimmune diseases, neoplastic and infectious diseases. Finally coproculture disclosed the presence of *Blastocystis hominis* in stool samples thus permitting to associate urticaria to parasitic infection. Both cutaneous manifestations and mild abdomen disturbs disappeared after appropriate treatment. Despite the high diffusion the aetiopathogenesis of chronic urticaria remains often undefined. A large number of parasites have been correlated with urticaria but few data exist as regards *Blastocystis hominis* infection; then our findings may add evidence to the role of this parasite in inducing chronic urticaria. Considering that *Blastocystis hominis* is a modest pathogen for humans, the mechanism is probably the typical one of cutaneous allergic hypersensitivity; antigen parasites induce the activation of specific clones of Th2 lymphocytes, the release of related cytokines and the consequent IgE production.

PMID: 15368795 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms, Substances

■ [Am J Trop Med Hyg. 2004 Apr;70\(4\):383-5.](#)

#### 66. **Irritable bowel syndrome: in search of an etiology: role of Blastocystis hominis.**

[Yakoob J](#), [Jafri W](#), [Jafri N](#), [Khan R](#), [Islam M](#), [Beg MA](#), [Zaman V](#).

Departments of Medicine and Pathology, Aga Khan University Hospital, Karachi, Pakistan. yakoobjaved@hotmail.com

#### Abstract

This study was designed to examine stool specimens of irritable bowel syndrome (IBS) patients for *Blastocystis hominis*, a common intestinal parasite. One hundred fifty patients were enrolled, 95 IBS cases and 55 controls. These patients provided a medical history, and underwent physical and laboratory evaluations that included stool microscopy and culture for *B. hominis* and colonoscopy. The 95 cases (51 males and 44 females) had a mean +/- SD age of 37.8 +/- 13.2 years. Stool microscopy was positive for *B. hominis* in 32% (30 of 95) of the cases and 7% (4 of 55) of the controls ( $P = 0.001$ ). Stool culture was positive in 46% (44 of 95) of the cases and 7% (4 of 55) of the controls ( $P < 0.001$ ). Stool culture for *B. hominis* in IBS was more sensitive than microscopy ( $P < 0.001$ ). *Blastocystis hominis* was frequently demonstrated in the stool samples of IBS patients; however, its significance in IBS still needs to be investigated. Stool culture has a higher positive yield for *B. hominis* than stool microscopy.

#### Comment in

[Am J Trop Med Hyg. 2005 May;72\(5\):501; author reply 501-2.](#)

PMID: 15100450 [PubMed - indexed for MEDLINE] [Free full text](#)



## MeSH Terms

[Biol Trace Elem Res.](#) 2004 Apr;98(1):21-6.

67. **Serum zinc and magnesium levels in patients with blastocystosis.**

[Kilic E](#), [Yazar S](#), [Saraymen R](#).

Department of Biochemistry and Clinical Biochemistry, Erciyes University, Medical Faculty, 38039-Kayseri, Turkey.

### Abstract

The aim of the study was to investigate the total content of the essential elements of zinc and magnesium levels in patients infected with *Blastocystis hominis*. Zinc and magnesium concentrations were measured in 52 patients who were positive for the intestinal parasite *Blastocystis hominis*. Scores were obtained for the positives and their age- and sex-matched 60 *Blastocystis hominis*-negative healthy controls. For comparison of two groups of continuous variables, the independent samples t-test was used. The mean concentration of magnesium in blood was significantly lower in *Blastocystis hominis*-positive patients than in their controls both in females ( $p < 0.05$ ) and males ( $p < 0.05$ ). The average zinc concentration in *Blastocystis hominis*-positive female patients was  $0.61 \pm 0.2$  mg/L and  $0.60 \pm 0.2$  mg/L in controls ( $p > 0.05$ ). The mean values of the zinc in blood were  $0.62 \pm 0.2$  mg/L in *Blastocystis hominis*-positive male patients and  $0.82 \pm 0.1$  in controls ( $p > 0.05$ ). No correlation could be demonstrated between age and mean values of zinc and magnesium in *Blastocystis*-positive females/males and controls ( $p > 0.05$ ). No significant correlation could be found between blood zinc and magnesium levels in *Blastocystis*-positive female/male patients and controls ( $p > 0.05$ ). Magnesium levels were found to be clearly decreased, whereas no change was observed in zinc levels in the patients with *Blastocystis* compared to controls.

PMID: 15051897 [PubMed - indexed for MEDLINE]



## MeSH Terms, Substances

[Acta Derm Venereol.](#) 2004;84(4):322-3.

68. **Cutaneous lesions in Blastocystis hominis infection.**

[Valsecchi R](#), [Leghissa P](#), [Greco V](#).

PMID: 15339085 [PubMed - indexed for MEDLINE]

## Publication Types, MeSH Terms, Substances

■ [J Parasitol](#). 2003 Jun;89(3):490-2.

69. **Prevalence of intestinal parasites among individuals with allergic skin diseases.**

Giacometti A, Cirioni O, Antonicelli L, D'Amato G, Silvestri C, Del Prete MS, Scalise G.

Institute of Infectious Diseases and Public Health, University of Ancona, Ospedale Regionale, via Conca, 1-60020 Ancona, AN, Italy. anconacmi@interfree.it

### Abstract

The prevalence of intestinal protozoans and helminths in stool samples of individuals with allergic cutaneous symptoms was evaluated to study a possible link between parasites and allergy. Altogether, 218 patients who had chronic urticaria, atopic dermatitis, or pruritus of unknown origin were included in the study. Standard laboratory tests for the detection of allergic etiology were performed for all patients. The presence of intestinal parasites was investigated using microscopy, immunofluorescence, and immunoenzymatic assays. Overall, protozoans and helminths were recovered from the stools of 48 subjects ( $P = 0.004$ ), 18 of whom were affected with intestinal symptoms ( $P = 0.023$ ). The presence of *Giardia lamblia* in the stools was significantly associated with allergic cutaneous manifestations ( $P = 0.030$ ). In addition, patients with allergy were significantly more likely to have  $\geq 5$  *Blastocystis hominis* organisms per field ( $P = 0.046$ ). There was a set of patients with allergic cutaneous diseases in whom the presence of intestinal parasites may not be incidental.

PMID: 12880246 [PubMed - indexed for MEDLINE]

 **Open Access**

### MeSH Terms

■ [Parasitol Res](#). 2003 May;90(1):48-51. Epub 2003 Jan 30.

70. **Hematological effects of Blastocystis hominis infection in male foreign workers in Taiwan.**

Cheng HS, Guo YL, Shin JW.

Institute of Environmental and Occupational Health, Medical College, National Cheng Kung University, No. 1, Dashiue Road, 701 Dung Chiu, Tainan, Taiwan.

### Abstract

*Blastocystis hominis* found in stool specimens has been the most frequently identified parasite among foreign workers from Southeast Asia in Taiwan since 1992. The prevalence of *B. hominis* was 14.1% in this study. In their quarantine physical examinations, 121 male Thai workers were examined hematologically and screened for stool parasites using the merthiolate-iodine-formaldehyde concentration method. Hematological values were compared in workers with and without a *B. hominis* infection. Multiple regressions were used to adjust for age. Those infected with any parasite other than *B. hominis* were excluded from further analysis. The workers infected with *B. hominis* had a lower leukocyte count ( $6.5 \pm 0.4 \times 10^3/\mu\text{mol}$ ) than those who were not ( $7.4 \pm 0.2 \times 10^3/\mu\text{mol}$ ). This was mainly caused by a reduced neutrophil count ( $3.2 \pm 0.4$  vs  $4.2 \pm 0.2 \times 10^3/\mu\text{mol}$ ). Hemoglobin ( $13.9 \pm 0.3$  vs  $14.5 \pm 0.1$  g/dl) and hematocrit ( $41.4 \pm 0.6$  vs  $42.9 \pm 0.2\%$ ) were also reduced in *B. hominis*-positive workers.

PMID: 12743803 [PubMed - indexed for MEDLINE]

 **SpringerLink**  
FULL-TEXT ARTICLE

### MeSH Terms

■ [J Egypt Soc Parasitol](#). 2003 Apr;33(1):13-30.

71. **Secretory and humoral antibody responses to Blastocystis hominis in symptomatic and asymptomatic human infections.**

Mahmoud MS, Saleh WA.

Department of Parasitology, Faculty of Medicine, Ain Shams University, Cairo 11566, Egypt.

### Abstract

The study included 3 groups of individuals, in the first 2 groups they had positive stool microscopic examinations only for *B. hominis* indicating blastocystosis, with and without gastrointestinal symptoms, respectively, while the last group included apparently healthy individuals with no parasites in stool. Stool and serum samples of these individuals were subjected to detection of anti-*B. hominis* fecal and serum IgA and serum IgG antibodies by indirect ELISA, and detection of *B. hominis* fecal and serum antigens by double sandwich ELISA. In symptomatic *B. hominis* infections with positive stool microscopy the study recorded first: specific secretory IgA and humoral IgA and IgG antibody

responses at a prevalence of 100%, 83.3% and 86.6%, respectively, with an increased significant difference ( $P<0.001$ ) of each from healthy controls, together with an increase in level of secretory IgA than that of humoral IgA antibody ( $P<0.001$ ), and second: the presence of specific antigens in stool and serum at a prevalence of 96.6% and 90%, respectively. With an increased significant difference ( $P<0.001$ ) of each from healthy controls together with the former at a higher level than the latter ( $P<0.05$ ). In asymptomatic *B. hominis* infections with positive stool microscopy the study recorded first; absence of each of the studied specific secretory and humoral antibody responses with no significant difference ( $P>0.05$ ) of each from healthy controls, and second; absence of specific antigens in stool and serum with no significant difference ( $P>0.05$ ) of each from healthy controls nor from each other. The explanations and implications of these results are discussed.

PMID: 12739797 [PubMed - indexed for MEDLINE]

### MeSH Terms, Substances

■ J Travel Med. 2003 Mar-Apr;10(2):128-30.

#### 72. **A placebo-controlled treatment trial of Blastocystis hominis infection with metronidazole.**

Nigro L, Larocca L, Massarelli L, Patamia I, Minniti S, Palermo F, Cacopardo B.

Infectious Diseases Unit, University of Catania, c/o Ascoli-Tomaselli Hospital, via Passo Gravina 185, 95125 Catania, Italy.

#### Abstract

*Blastocystis hominis*, previously considered a harmless yeast, is now classified as a protozoan inhabiting the human intestinal tract. The pathogenicity of *B. hominis* remains controversial and is currently the subject of extensive debate.1- 5 As a result of the uncertainty surrounding the pathogenic role of *B. hominis*, large-scale treatment trials of *B. hominis* infection have so far been lacking. In spite of this, several drugs have been reported to be active against the parasite.6-8 The present study was carried out in order to evaluate the efficacy of metronidazole treatment in inducing clinical remission and parasitologic eradication in immunocompetent individuals with *B. hominis* as the only evident cause of diarrhea.

PMID: 12650658 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

■ Rev Gastroenterol Peru. 2003 Jan-Mar;23(1):29-35.

#### 73. **[Human blastocystosis: prospective study symptomatology and associated epidemiological factors].**

[Article in Spanish]

Barahona Rondón L, Maguiña Vargas C, Náquira Velarde C, Terashima I A, Tello R.

Universidad Peruana Cayetano Heredia, Lima, Perú.

#### Abstract

An attempt has been made to contribute to the understanding of the symptoms and factors associated with the *Blastocystis Hominis* infection, as seen in persons seeking outside consultation from the Dermatological and Transmissible Diseases Department (DTDD) at the C.H.N.H. This is a case-control study carried out in people between the ages of 5 and 80 in a period from January to March 1999. The cases tested positive in parasitological tests for *Blastocystis Hominis* and were absent of other enteropathogens. The controls tested negative in parasitological tests for *Blastocystis Hominis* and were absent of other enteropathogens. A clinical chart was used to register details of symptomatology and factors associated with the *Blastocystis Hominis* infection. 74 cases and 70 controls were studied, matched by sex and age. A statistical correlation was obtained ( $p<0.05$ ) among symptomatic persons and presence of *Blastocystis Hominis* (91,9%). The symptomatology associated with the *Blastocystis Hominis* infection by order of statistical significance ( $p<0.05$ ) was: Abdominal pain ( $OR=3$ ) 1.47< $OR<6.60$ , abdominal ballooning ( $OR=2.36$ ) 1.06< $OR<5.29$ , urticaria ( $OR=3.19$ ) 0.81< $OR<12.48$ . The only risk factor associated with the *Blastocystis Hominis* infection was the consumption of unboiled water ( $OR=2.52$ ) 1.01< $OR<5.83$ . In conclusion, *Blastocystis Hominis* is associated to symptomatic subjects with abdominal pain and ballooning and urticaria, who possess at least two or three positive tests. This infection would be facilitated by the consumption of unboiled water.

PMID: 12768212 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

World J Gastroenterol. 2002 Oct;8(5):928-32.

74. **Epidemiological survey of Blastocystis hominis in Huainan City, Anhui Province, China.**

Wang KX, Li CP, Wang J, Cui YB.

Department of Etiology and Immunology, School of Medicine, Anhui University of Science Technology, Huainan 232001, Anhui Province, China.

### Abstract

**AIM:** To provide scientific evidence for prevention and controlling of blastocystosis, the infection of Blastocystis hominis and to study its clinical significance in Huainan City, Anhui Province, China.

**METHODS:** Blastocystis hominis in fresh stools taken from 100 infants, 100 pupils, 100 middle school students and 403 patients with diarrhea was smeared and detected with method of iodine staining and hematoxylin staining. After preliminary direct microscopy, the shape and size of Blastocystis hominis were observed with high power lens. The cellular immune function of the patients with blastocystosis was detected with biotin-streptavidin (BSA).

**RESULTS:** The positive rates of Blastocystis hominis in fresh stools taken from the infants, pupils, middle school students and the patients with diarrhea, were 1.0 % (1/100), 1.0 % (1/100), 0 % (0/100) and 5.96 % (24/403) respectively. Furthermore, the positive rates of Blastocystis hominis in the stool samples taken from the patients with mild diarrhea, intermediate diarrhea, severe diarrhea and obstinate diarrhea were 6.03 % (14/232), 2.25 % (2/89), 0 % (0/17) and 12.31 % (8/65) respectively. The positive rates of Blastocystis hominis in fresh stools of male and female patients with diarrhea were 7.52 % (17/226) and 3.95 % (7/177) respectively, and those of patients in urban and rural areas were 4.56 % (11/241) and 8.02 % (13/162) respectively. There was no significant difference between them ( $P>0.05$ ). The positive rates of CD(3)(+), CD(4)(+), CD(8)(+) in serum of Blastocystis hominis-positive and-negative individuals were  $0.64\pm 0.06$ ,  $0.44\pm 0.06$ ,  $0.28\pm 0.04$  and  $0.60\pm 0.05$ ,  $0.40\pm 0.05$  and  $0.30\pm 0.05$  respectively, and the ratio of CD(4)(+)/CD(8)(+) of the two groups were  $1.53\pm 0.34$  and  $1.27\pm 0.22$ . There was significant difference between the two groups ( $P<0.05$ ,  $P<0.01$ ).

**CONCLUSION:** The prevalence of Blastocystis hominis as an enteric pathogen in human seems not to be associated with gender and living environment, and that Blastocystis hominis is more common in stool samples of the patients with diarrhea, especially with chronic diarrhea or obstinate diarrhea. When patients with diarrhea infected by Blastocystis hominis, their cellular immune function decreases, which make it more difficult to be cured.

PMID: 12378644 [PubMed - indexed for MEDLINE] [Free full text](#)

Baishideng Publishing

### MeSH Terms

Dtsch Med Wochenschr. 2002 Aug 23;127(34-35):1748-53.

75. **[Infections and diseases after travelling].**

[Article in German]

Harms G, Dörner F, Bienzle U, Stark K.

Institut für Tropenmedizin, und Medizinische Fakultät Charité der Humboldt-Universität zu Berlin, Germany.  
gundel.harms@charite.de

### Abstract

**BACKGROUND AND OBJECTIVE:** With intensifying international travel numbers of travel associated infections and diseases will increase. Systematic studies on infections and diseases with regard to the travel destination in tropical and subtropical areas are scarce in Germany.

**PATIENTS AND METHODS:** Data regarding travel destination, reason, type and duration of travel, symptoms, clinical findings, laboratory results as well as diagnoses of 2024 patients (male 1010, mean age 35 years; female 1014, mean age 33 years) presenting at the outpatient clinic of the Institute of Tropical Medicine Berlin after returning from travel to tropical or subtropical areas were assessed.

**RESULTS:** The most frequent reasons for consultation were diarrhea (33 %), fever (17 %) and skin affections (14 %). A definitive diagnosis was established in 31 % (635). Significant differences were found for prevalences of infectious diseases with regard to travel destinations. 1.5 % of the travellers had contracted malaria. Only 34% of the returnees from malaria-endemic areas had taken chemoprophylaxis; in case of travel to Africa and Asia, chemoprophylaxis corresponded to international standards in only 48 % and 23%, respectively. Giardia lamblia was the most frequently detected intestinal pathogen. Blastocystis hominis was found to be significantly associated with diarrhea.

**CONCLUSIONS:** Most of the travel-associated infections are self-limited. In case of fever, malaria and potentially hemorrhagic fever should be excluded and be followed by a stepwise investigation on the cause of fever. In case of

diarrhea, parasitologic investigations should be performed by an experienced laboratory and fresh stool samples should be used. Intensive co-operation will be necessary between physician, pharmacists and others active in the field of travel medicine in order to address the shortcomings in chemoprophylaxis for malaria. An increasing need for expertise in tropical and travel medicine, especially among private physicians is expected.

PMID: 12192633 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms

[Am J Trop Med Hyg. 2002 Jun;66\(6\):799-803.](#)

#### 76. **Seasonal prevalence of intestinal parasites in the United States during 2000.**

Amin OM.

Parasitology Center, Inc, Tempe, Arizona 85281, USA.

#### Abstract

One-third of 5,792 fecal specimens from 2,896 patients in 48 states and the District of Columbia tested positive for intestinal parasites during the year 2000. Multiple infections with 2-4 parasitic species constituted 10% of 916 infected cases. *Blastocystis hominis* infected 662 patients (23% or 72% of the 916 cases). Its prevalence appears to be increasing in recent years. Eighteen other species of intestinal parasites were identified. *Cryptosporidium parvum* and *Entamoeba histolytica*/*E. dispar* ranked second and third in prevalence, respectively. Prevalence of infection was lowest (22-27%) in winter, gradually increased during the spring, reached peaks of 36-43% between July and October, and gradually decreased to 32% in December. A new superior method of parasite detection using the Proto-fix-CONSED system for fixing, transport, and processing of fecal specimens is described. In single infections, pathogenic protozoa caused asymptomatic subclinical infections in 0-31 % of the cases and non-pathogenic protozoa unexpectedly caused symptoms in 73-100% of the cases. The relationship between Charcot-Leyden crystals and infection with four species of intestinal parasites is examined and the list of provoking parasitic causes is expanded.

PMID: 12224595 [PubMed - indexed for MEDLINE] [Free full text](#)



### MeSH Terms

[Br J Dermatol. 2002 Jun;146\(6\):1113-4.](#)

#### 77. **Hypersensitivity to non-steroidal anti-inflammatory drugs and chronic urticaria cured by treatment of *Blastocystis hominis* infection.**

Biedermann T, Hartmann K, Sing A, Przybilla B.

PMID: 12072100 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

[Praxis \(Bern 1994\). 2002 May 22;91\(21\):936-8.](#)

#### 78. **[50-year-old patient returning from Hawaii with changed stool habits. *Blastocystis hominis*].**

[Article in German]

Estlinbaum T, Hatz Ch.

Medizinische Universitätspoliklinik, Kantonsspital Basel.

PMID: 12085551 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

Ann Ital Med Int. 2002 Apr-Jun;17(2):131-2.

79. **[Blastocystis hominis and blastocystosis (Zierdt-Garavelli disease)].**

[Article in Italian]

Sangiorgi M.

PMID: 12154808 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Personal Name as Subject**

Acta Derm Venereol. 2002;82(1):60.

80. **Palmoplantar pruritus subsiding after Blastocystis hominis eradication.**

Kick G, Rueff F, Przybilla B.

PMID: 12013204 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Substances**

Acta Trop. 2002 Jan;81(1):1-5.

81. **Protozoan infections and intestinal permeability.**

Dagci H, Ustun S, Taner MS, Ersoz G, Karacasu F, Budak S.

Department of Parasitology, School of Medicine, University of Ege, 35100 Bornova, Izmir, Turkey. hdagci@med.ege.edu.tr

**Abstract**

Intestinal permeability (IP) studies using some macromolecules have been assumed to demonstrate the intactness of intestinal mucosa. The aim of the present study is to determine the changes in IP among patients with protozoan infections. Thirty nine patients with protozoan infections and ten healthy controls were enrolled in the study. Protozoa were diagnosed by Native-Iugol, Richie and Trichrome staining of faeces. IP was evaluated by diethyl triamine penta acetic acid labeled with 99m Technetium (99mTc labeled DTPA) assay. The IP was found to have increased in patients with protozoan infections compared with control patients (7.20+/-5.52 vs. 4.47+/-0.65%, P=0.0017). The IP values were 9.91+/-10.05% in Giardia intestinalis group, 6.81+/-2.25% in Blastocystis hominis group, 5.78+/-2.84% in Entamoeba coli group. In comparison with the control group, the IP was significantly higher in G. intestinalis and B. hominis patients (P=0.0025, P=0.00037, respectively), but not in E. coli patients. In conclusion, the IP increases in patients with G. intestinalis and B. hominis but not with E. coli infection. This finding supports the view that IP increases during the course of protozoan infections which cause damage to the intestinal wall while non-pathogenic protozoan infections have no effect on IP. The increase in IP in patients with B. hominis brings forth the idea that B. hominis can be a pathogenic protozoan.

PMID: 11755426 [PubMed - indexed for MEDLINE]



**Publication Types, MeSH Terms, Substances**

Parasitol Res. 2001 Dec;87(12):1029-30.

82. **Blastocystis hominis modulates immune responses and cytokine release in colonic epithelial cells.**

Long HY, Handschack A, König W, Ambrosch A.

Institute of Medical Microbiology, Otto-von-Guericke-University, Magdeburg, Germany. huayan\_long@hotmail.com

**Abstract**

An experimental in vitro model has been developed in order to determine whether Blastocystis hominis is able to trigger inflammatory cytokine response in colonic epithelial cells. After 24 h incubation of B. hominis with the cell lines HT-29 and T-84, B. hominis cells were not able to cause cytopathic effects, but significant increases in the release of the cytokines IL-8 and GM-CSF could be observed. However, after the first 6 h of co-incubation, the production of IL-8 was not increased in HT-29 cells, and even reduced when Escherichia coli (bacteria or lipopolysaccharide) was present during co-incubation. Similar effects were observed using supernatants of B. hominis culture. These data indicate that B. hominis induces as well as modulates the immune response in intestinal epithelial cells, and we conclude that different pathophysiological events may occur during B. hominis infection.

PMID: 11763434 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms, Substances

Am J Trop Med Hyg. 2001 Oct;65(4):393-6.

83. **Ribodemes of Blastocystis hominis isolated in Japan.**

Kaneda Y, Horiki N, Cheng XJ, Fujita Y, Maruyama M, Tachibana H.

Department of Infectious Diseases, Tokai University School of Medicine, Isehara, Japan.

#### Abstract

To determine if genetic diversity of *Blastocystis hominis* exists in Japan, we monitored 64 *B. hominis*-infected people: 39 asymptomatic people whose infections were detected during routine medical check-ups (32 Japanese and 7 non-Japanese) and 25 patients with gastrointestinal symptoms who visited the outpatient clinics of St. Luke's International Hospital (19 Japanese and 6 non-Japanese). We detected 6 known and 2 new riboprint patterns in isolates from the infected people. There were no differences in the distribution of ribodemes between isolates from Japanese and non-Japanese people, similar to that in other countries. However, we noted a possible relationship between ribodeme type and pathogenicity. The results suggest that ribodemes I, III, and VI may be responsible for gastrointestinal symptoms.

PMID: 11693890 [PubMed - indexed for MEDLINE] [Free full text](#)



### Publication Types, MeSH Terms, Substances

J Egypt Soc Parasitol. 2001 Aug;31(2):627-35.

84. **Morphology, histochemistry and infectivity of Blastocystis hominis cyst.**

Abou El Naga IF, Negm AY.

Department of Parasitology, Faculty of Medicine, Alexandria University, Egypt.

#### Abstract

Different morphological forms of *Blastocystis hominis* had been identified in human stool samples. These included both cystic and trophic stages. The latter was induced to encyst by keeping them in potassium dichromate solution for two weeks. Suspected of being the infective stage, cysts were studied in more detail as regards their morphology using both light and electron microscopy. Histochemistry and infectivity studies were also carried out. Light microscopy revealed the cysts to be ovoid or round 5-7 microm with thick cyst wall and a single nucleus. The induced cysts were morphologically similar to the cysts present in the stool. By electron microscope, the cyst wall was evident surrounded by an additional fibrillar coat. The cytoplasm contained one nucleus, many mitochondria, glycogen deposits and a number of variable sized vacuoles. Histochemical studies detected carbohydrates in the cyst wall and fat globules in the cytoplasm. Oral inoculation of albino mice with these cysts led to inflammatory changes in the large and small intestine. The parasite was found at the mucosal epithelium but with no invasion. Different forms of the parasite were detected in the lumen of the intestine.

PMID: 11478461 [PubMed - indexed for MEDLINE]

### MeSH Terms

Can Commun Dis Rep. 2001 May 1;27(9):76-84.

85. **Blastocystis hominis: a new pathogen in day-care centres?**

[Article in English, French]

Koutsavlis AT, Valiquette L, Allard R, Soto J.

Community Medicine Residency Programme, Faculty of Medicine, McGill University, Quebec, Canada.

PMID: 11381629 [PubMed - indexed for MEDLINE] [Free full text](#)



**MeSH Terms**

Am J Gastroenterol. 1999 Nov;94(11):3245-7.

86. **Effect of trimethoprim-sulfamethaxazole in Blastocystis hominis infection.**

Ok UZ, Girinkardeşler N, Balcioğlu C, Ertan P, Pirildar T, Kilimcioğlu AA.

Division of Microbiology and Clinical Microbiology, Faculty of Medicine, Celal Bayar University, Manisa, Turkey.

**Abstract**

**OBJECTIVE:** Blastocystis hominis (*B. hominis*) is a common intestinal parasite that has long been considered nonpathogenic. Recently there have been many reports supporting a role for the organism as a potential pathogen. We performed a study to examine the pathogenicity of *B. hominis* and the effect of trimethoprim-sulfamethaxazole (TMP-SMX) on this organism.

**METHODS:** Stool samples of patients, who came to the Department of Parasitology, Faculty of Medicine, Celal Bayar University, were examined by direct wet-mount, trichrome staining, formalin-ethyl acetate concentration, and Kinyoun acid fast techniques for intestinal parasites, and bacteriological stool cultures were performed. Fifty-three symptomatic patients (38 children and 15 adults) with two consequent stool samples positive for abundant *B. hominis* (five or more organisms per x400 field) and negative for other parasitic and bacterial pathogens were treated with TMP-SMX for 7 days, children 6 mg/kg TMP, 30 mg/kg SMX, and adults 320 mg TMP, 1600 mg SMX, daily. On the seventh day, at the end of treatment, stool samples of all patients were examined by same methods, and clinical symptoms were again evaluated.

**RESULTS:** *B. hominis* was eradicated in 36 of 38 (94.7%) children, and 14 of 15 (93.3%) adults. Clinical symptoms disappeared in 39 (73.6%), decreased in 10 (18.9%), and no change was observed in one (1.9%) patient, whereas symptoms persisted in all three (5.7%) patients in whom *B. hominis* could not be eradicated. Mean number of stools per day was significantly decreased from 4.3 to 1.2 in the 33 children ( $p < 0.001$ ), and decreased from 3.5 to 1.0 in the four adults ( $p = 0.06$ ) with diarrhea.

**CONCLUSIONS:** These results suggested that *B. hominis* may be pathogenic, especially when it is present in large numbers, and TMP-SMX is highly effective against this organism. Although there are some anecdotal reports, to our knowledge this is the first study examining the effect of TMP-SMX on *B. hominis* in humans.

PMID: 10566723 [PubMed - indexed for MEDLINE]

**MeSH Terms, Substances**

Ann Biol Clin (Paris). 1999 Sep-Oct;57(5):601-4.

87. **[Blastocystis hominis: epidemiological and clinical remarks from more than 3,500 stool examinations].**

[Article in French]

Pinel C, Réjasse C, Picot S, Brenier-Pinchart MP, Grillot R, Ambroise-Thomas P.

Service de parasitologie-mycologie, Hôpital Albert-Michallon, BP 217, 38043 Grenoble Cedex 9.

PMID: 10518063 [PubMed - indexed for MEDLINE] [Free full text](#)

**MeSH Terms, Substances**

Eur J Clin Microbiol Infect Dis. 1999 Jun;18(6):436-9.

88. **Irritable bowel syndrome in patients with Blastocystis hominis infection.**

Giacometti A, Cirioni O, Fiorentini A, Fortuna M, Scalise G.

Institute of Infectious Diseases and Public Health, University of Ancona, AN, Italy. cmalinf@popcsi.unian.it

**Abstract**

The prevalence of Blastocystis hominis in stool specimens of individuals with gastrointestinal symptoms was evaluated to study a possible link between the protozoan and the irritable bowel syndrome. According to the Rome diagnostic criteria, 388 patients were evaluated. Altogether, 81 patients were classified as affected by irritable bowel syndrome.

Blastocystis hominis was recovered from the stools of 38 subjects, 15 of whom belonged to the group with irritable bowel syndrome ( $P = 0.006$ ). In addition, patients with irritable bowel syndrome were significantly more likely to have five or more Blastocystis hominis organisms per field ( $P = 0.031$ ). In conclusion, there was a set of patients with irritable bowel syndrome in whom the presence of Blastocystis hominis may not be incidental.

PMID: 10442423 [PubMed - indexed for MEDLINE]



### MeSH Terms

■ [Parasitol Res.](#) 1999 Feb;85(2):93-7.

89. **Soluble-protein and antigenic heterogeneity in axenic Blastocystis hominis isolates: pathogenic implications.**

Lanuzá MD, Carbajal JA, Villar J, Mir A, Borrás R.

Departamento de Microbiología, Facultad de Medicina, Valencia, Spain.

### Abstract

The protein profile and the antigenic cross-reactivity of 18 axenic isolates of Blastocystis hominis obtained from symptomatic patients with chronic diarrhea (14 isolates) showing no evidence of parasitic etiology and from patients with acute diarrhea attributable in 2 cases to Salmonella spp. were analyzed. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis of soluble proteins showed the existence of a common profile composed of 31 bands, with molecular weights ranging between 24 and >200 kDa, and minor differences in the proteins of 149, 118, 106, 50, 48, 47, and 30 kDa. These differences allowed us to classify the strains into three related patterns (I-III). In an indirect immunofluorescence assay, all strains were serologically identical, but two related antigenic groups (1 and 2) were found in double-immunodiffusion and Western-blot studies. The isolates of protein patterns I and II belonging to antigenic group 1 were isolated from patients with chronic diarrhea, whereas the four isolates from patients with acute diarrhea were clustered in protein pattern III and in antigenic group 2. These results confirm the protein and antigenic heterogeneity of B. hominis and the existence of demes with different pathogenic roles.

PMID: 9934956 [PubMed - indexed for MEDLINE]



### MeSH Terms, Substances

■ [Bol Chil Parasitol.](#) 1998 Jul-Dec;53(3-4):65-70.

90. **[Blastocystis hominis in patients at the Ruiz y Paez University Hospital from Bolivar City, Venezuela].**

[Article in Spanish]

Devera R, Azacon B, Jiménez M.

Departamento de Parasitología y Microbiología, Escuela de Medicina, Universidad de Oriente, Ciudad Bolívar, Venezuela.

### Abstract

Blastocystis hominis is a polymorphic protozoan of discussed taxonomic position, which is currently associated with human intestinal disease. In order to determine the prevalence of the microorganism in a sample of hospitalized patients, a study was carried out from november 1996 to april 1997 on 100 adult patients of both sexes aged 20 to 79 years at the "Ruíz y Páez" University Hospital of Bolívar city, Venezuela. A coproparasitological study was carried out using direct examination and Faust method. Infection by parasites and/or commensals was demonstrated in 48 patients. The most frequent agent was B. hominis with a prevalence of 42.0%. We did not find a statistically association between sex ( $P > 0.05$ ) or age ( $X^2 = 3.52$ ; d.f. = 3) and B. hominis infection. B. hominis was most frequently identified as the single parasite (88.1%), and with a number of less than 5 cells per 400X microscopic field (73.8%). The infection was more common in patients with base chronic-immunosuppressive diseases, the major one being cancer. Diarrhea was observed in 27.0% of cases. Due to its high prevalence, especially as a single agent, together with the particular immunological characteristics of the patients studied, a potential pathogenic role of the opportunistic type is suggested for B. hominis.

PMID: 10413881 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

■ [Parasitol Res.](#) 1998 Jun;84(6):450-4.

91. **Cytopathic effect of Blastocystis hominis after intramuscular inoculation into laboratory mice.**

Moe KT, Singh M, Gopalakrishnakone P, Ho LC, Tan SW, Chen XQ, Yap EH.

Department of Microbiology, Faculty of Medicine, National University of Singapore, Singapore.

**Abstract**

The present study investigated the pathogenesis of *Blastocystis hominis* by intramuscular injection of the organism into experimental mice. A total of 27 naïve BALB/c mice aged 6-8 weeks were injected in the leg muscle with axenic culture isolate B of *B. hominis*. Histological examination at different times revealed that *B. hominis* could produce a severe inflammatory reaction and myonecrosis. Most changes were observed at 6 h after injection and for up to 2-3 days. By 2 weeks the muscle had regained normal histology. There was infiltration of polymorphonuclear leukocytes (PML) into the injection site, indicating that *B. hominis* had a strong chemoattractant activity for PML.

PMID: 9660133 [PubMed - indexed for MEDLINE]



**MeSH Terms**

■ [Cad Saude Publica.](#) 1998 Apr;14(2):401-7.

92. **Blastocystosis in preschool children from bolivar city, venezuela**

[Article in Spanish]

Devera RA, Velasquez VJ, Vasquez MJ.

Departamento de Medicina Tropical, Instituto Oswaldo Cruz, Fundacao Oswaldo Cruz, Av. Brasil, 4365, Manguinhos, Rio de Janeiro, RJ, 21045-900, Brasil.

**Abstract**

To evaluate the prevalence of *Blastocystis hominis* and its clinical relevance, 169 preschool children from the 'Los Coquitos' nursery school living in Bolivar City, Venezuela, were studied. Stool samples were obtained and examined by direct microscopic examination, and the Faust and Willis concentration techniques. Some 72 of the children had intestinal parasites, of whom 32 (29.09%) had *B. hominis*. Prevalence for the latter was 18.93 % +/- 5.93 %. No differences were observed by sex or age ( $X(2) = 1.84$  DF= 3;  $p > 0.05$ ). In the majority (53.13%) of the children, *B. hominis* was the only parasite. *Giardia lamblia* was the parasite most frequently identified with *B. hominis* (39.13%). In 1994, in 12% of the cases more than five microorganisms per microscopic field were observed. Clinical manifestations were observed in 70.58% of the preschool children. Presence of parasites was not correlated with symptomatology, but only with severity. Proper clinical and parasitological response to treatment was observed in 80% and 90% of patients, respectively. The conclusion was that *B. hominis* is a relatively frequent intestinal parasite among the preschool children evaluated.

PMID: 9658225 [PubMed - as supplied by publisher]

■ [J Egypt Soc Parasitol.](#) 1997 Aug;27(2):471-8.

93. **Intestinal parasites among food-handlers in Qalyobia Governorate, with reference to the pathogenic parasite blastocystis hominis.**

Sadek Y, el-Fakahany AF, Lashin AH, el-Salam FA.

Department of Hepatology, Benha Faculty of Medicine, Zagazig University, Egypt.

**Abstract**

A total of 1700 male food handlers, above 20 years of age who came for health clearance certificate were the subjects of the present study. Health assessment questionnaire was filled out on each person including dietary habits, water supply, history of diarrhoeal disease. Clinical examination and stool samples collection in 3 alternative days were performed. The food handlers were divided into symptomatic (700) and asymptomatic (1000). Different concentration methods as well as test tube culture for *Strongyloides* larvae were done. Samples were preserved in PVA, trichrome stained slides were examined for protozoal parasites. Nineteen percent had intestinal parasites, *G. lamblia*, *E. histolytica*, *A. lumbricoides*, *S. mansoni*, *A. duodenale*, *T. trichura*, *H. nana*, *St. stercoralis*, *E. vermicularis* and mixed infection & non-pathogenic; *E. coli*, *I. Butschlii*, *C. mesnilli*, *E. nana*, *T. hominis* and mixed infection. *Blastocystis hominis* was recovered from stools of 8.5% of symptomatic and 4% of asymptomatic. 2.4% symptomatic and 2% asymptomatic had *B. hominis* significant infection. *B. hominis* was considered significant if > 5 organisms per HPF was counted. Significant infection was higher among symptomatic than asymptomatic persons with detectable

faecal leucocytes especially eosinophils. The authors recommended that physicians as well as diagnostic parasitologists should be aware of the potential clinical significance of *B. hominis* especially, when present alone in significant number, otherwise positive cases must be considered as carriers and followed up for any ill effects.

PMID: 9257986 [PubMed - indexed for MEDLINE]

### MeSH Terms

■ [Bol Chil Parasitol.](#) 1997 Jul-Dec;52(3-4):77-81.

94. **[Prevalence of Blastocystis hominis infection in schoolchildren from Bolivar City, Venezuela].**

[Article in Spanish]

Devera RA, Punos GN, Velásquez VJ, Catanese JA, Meneses RG.

Departamento de Medicina Tropical, Instituto Oswaldo Cruz, FIOCRUZ, Rio de Janeiro, Brasil.

### Abstract

*Blastocystis hominis* is found in about 25% of feces in normal asymptomatic people. Its pathogenic role is still discussed. A prospective study was performed to determine the prevalence of *B. hominis* infection in schoolchildren from Bolivar City. We evaluated 446 children, between five and fourteen years old, both sexes, using direct examination of feces and Willis Method. They were also evaluated clinically. Results showed that *B. hominis* had a prevalence of 16.8%. We did not find a statistically significant association between sex ( $P > 0.05$ ) or age and infection with *B. hominis* ( $\chi^2 = 1.94$  g.l = 4). In 39 schoolchildren (52.0%) we identified other parasites along with *B. hominis*, the most frequent was *Trichuris trichiura* as helminth and *Giardia lamblia* as protozoan. We observed *B. hominis* alone in 36 cases (48.0%). There was a spectrum of clinical symptoms in 41 (54.7%) of all children evaluated. Diarrhea was the most frequently clinical manifestation observed. Other studies are necessary to determine clinical relevance of *B. hominis* in school population in Bolivar City.

PMID: 9640685 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

■ [J Infect.](#) 1997 Jul;35(1):63-6.

95. **The role of Blastocystis hominis as a possible intestinal pathogen in travellers.**

Jelinek T, Peyerl G, Löscher T, von Sonnenburg F, Nothdurft HD.

Department of Infectious Diseases and Tropical Medicine, University of Munich, München, Germany.

### Abstract

The role of *Blastocystis hominis* as a pathogen for man has been controversially discussed, while travel history has been implicated as a risk factor of infection. Few controlled studies of the association between *B. hominis* and symptomatic diseases have been performed. Therefore, a case-control study among 795 German tourists returning from tropical countries was conducted. The prevalence of the organism among patients with and without symptoms was assessed. *Blastocystis hominis* was detected in 69 of 469 (14.7%) patients with diarrhoea and in 21 of 326 (5.7%) controls. However, other organisms causing diarrhoea were detected in 18 of the 69 (26.1%) symptomatic patients with *B. hominis*. Thus, 51 of 469 (10.8%) symptomatic patients had *B. hominis* in the absence of other pathogens in their stool, significantly more than in the asymptomatic group (5.2%;  $P = 0.005$ ). Irrespective of the development of symptoms, the organism was most frequently acquired during journeys to the Indian subcontinent. The results of this study suggest that *B. hominis* is associated with development of diarrhoea in travellers to tropical destinations and that frequently concurrent infections with other organisms occur.

PMID: 9279726 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms

■ [Med Clin \(Barc\).](#) 1997 Apr 26;108(16):608-12.

96. **[Clinical significance of Blastocystis hominis infection: epidemiologic study].**

[Article in Spanish]

Carbajal JA, Villar J, Lanuza MD, Esteban JG, Muñoz C, Borrás R.

Departamento de Microbiología, Facultad de Medicina y Hospital Clínico Universitario, Valencia.

### Abstract

**BACKGROUND:** To evaluate the frequency of *Blastocystis hominis* parasitation and to ascertain its role as an intestinal a prospective study during 18 months pathogen has been carried out.

**SUBJECTS AND METHODS:** The study included 2,039 patients, which were classified in three groups (asymptomatic [group A], with suspicion of parasitosis [group B], with diarrhoea [group C]). In all cases a coproparasitological study was performed. In the group C the presence of non-parasitic enteropathogens was also investigated. In patients with *B. hominis* in the absence of other pathogens clinical and epidemiological characteristics were evaluated. Also, its was determined the morphology and quantification of parasites.

**RESULTS:** Parasites were identified in 26.2% of population. *B. hominis* was identified in 336 patients (16.5%). The frequency of parasitation was superior in adults ( $p < 0.0001$ ), with a slight predominance in the female sex. The rate of asymptomatic carriers was 3.3%. In 21 patients *B. hominis* (group C) was observed in absence of other enteropathogens. Statistical significant association was found between *B. hominis*, in absence of other pathogens and the presence of clinical manifestations ( $p < 0.0001$ ), the most common of which were diarrhoea and abdominal pain. We did not find a statistically significant association between the number of *B. hominis* present and stool characteristics. The vacuolar form was the predominant morphological type. The ameboid form was observed only in diarrhoeal stools.

**CONCLUSIONS:** *B. hominis* is the most frequent parasite found in faecal parasitological investigation. In absence of other causes, *B. hominis* must be considered as a pathogen.

### Comment in

[Med Clin \(Barc\). 1998 Apr 4;110\(12\):478-9.](#)

PMID: 9303956 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

[Am J Trop Med Hyg. 1997 Mar;56\(3\):301-6.](#)

### 97. Significantly increased IgG2 subclass antibody levels to *Blastocystis hominis* in patients with irritable bowel syndrome.

[Hussain R](#), [Jaferi W](#), [Zuberi S](#), [Baqai R](#), [Abrar N](#), [Ahmed A](#), [Zaman V](#).

Department of Microbiology, Aga Khan University, Karachi, Pakistan.

### Abstract

*Blastocystis hominis* is a common intestinal parasite of humans in the tropics whose pathogenic role is in dispute. Its presence has been reported in a variety of intestinal disorders resembling irritable bowel syndrome (IBS) such as diarrhea, anorexia, and flatulence. We have therefore investigated a possible link between IBS and blastocystosis by determining IgG antibody levels to *B. hominis* in patients with IBS. Levels of IgG antibodies were significantly elevated in patients with IBS compared with asymptomatic controls ( $P < 0.0001$ , by Student's t-test) in both *B. hominis* stool culture-positive and stool culture-negative IBS patients. When IgG antibodies were divided into their respective subclasses, only IgG2 levels were significantly increased in IBS patients compared with asymptomatic controls, indicating that the predominant response in these patients may be directed to carbohydrate antigens. The diagnostic usefulness of this test in IBS patients remains to be established because these data are only suggestive of a possible link between *B. hominis* and IBS. However, we hope that this antibody test will help in elucidating the controversy that surrounds the role of *B. hominis* as a pathogen at present.

PMID: 9129532 [PubMed - indexed for MEDLINE]



### MeSH Terms, Substances

[Acta Gastroenterol Latinoam. 1997;27\(2\):67-73.](#)

### 98. [Parasitosis in an adult population with chronic gastrointestinal disorders].

[Article in Spanish]

[Zdero M](#), [Cabrera G](#), [Ponce de León P](#), [Nocito I](#), [Echenique C](#).

### Abstract

We worked with 185 middle-class patients above 18 years of age, both sexes, who presented diarrhea and/or chronic gastrointestinal disorders. The faeces were collected serially in formol 10% and processed in the following

way: direct microscopy, with and without wet staining, concentration by Ritchie's method, 1% safranin technique for a specific investigation of *Cryptosporidium* sp., and faecal sieving macroparasites. Twenty eight point six of the studied patients showed at least one enteroparasite in their faeces, 48 harboured one parasite and 5 harboured two parasites. The following parasites were found and their corresponding percentages in the entire studied population are given below: *Blastocystis hominis* 15.7%, *Giardia lamblia* 7.5%, *Cryptosporidium* sp. 1.6%, *Entamoeba coli* 3.3%, *Chilomastix mesnili* 1.1%, *Ancylostoma duodenale*-*Necator americanus* 0.5%, *Ascaris lumbricoides* 0.5%, *Enterobius vermicularis* 0.5% y *Endolimax nana* 0.5%. The most frequently found enteroparasites in the positive patients were *B. hominis* and *G. lamblia*. *Cryptosporidium* sp. was diagnosed in only three patients. The source of infection could be presumed in all of them. The symptomatology coincided with that described for this coccid in the bibliography. In spite of the fact that they were HIV seronegative patients the diarrhea was not self-limiting, but the immunologic profile of their relatives remained unknown and no other cause of immunosuppression could be detected with justified chronicity. The treatment with spiramycin was effective. Giardiasis was found in 17 patients, and the source of infection could not be inferred in any of them. They all had chronic diarrhea and their most frequent symptoms were abdominal pain, metallic taste, flatulency and nausea. Most of these patients were harboured one parasite, and only 2 of them simultaneously presented another faecal parasite associated to *G. lamblia*. Treatment with metronidazole was successful in all of them. Twenty nine patients were found to have *B. hominis*. The source of infection could not be inferred, this amoeboid was present as the only parasite in 25 patients. Predominant symptoms were flatulence, abdominal distention and colic. All patients suffered from chronic diarrhea, alternating, in some cases, with constipation. Good therapeutic results were obtained with metronidazole. Considering that one third of the patients examined presented faecal parasites associated to chronic disorders, it is important to insist on the detection of parasites to chronic disorders, it is important to insist on the detection of parasites using appropriate diagnostic techniques since the application of specific therapy made their eradication possible as well as relieving the patients' symptomatology.

#### Comment in

[Acta Gastroenterol Latinoam. 1997;27\(2\):92-7.](#)

PMID: 9412130 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms

[Parasitol Res. 1997;83\(4\):319-25.](#)

#### 99. Experimental *Blastocystis hominis* infection in laboratory mice.

[Moe KT](#), [Singh M](#), [Howe J](#), [Ho LC](#), [Tan SW](#), [Chen XQ](#), [Ng GC](#), [Yap EH](#).

Department of Microbiology, Faculty of Medicine, National University of Singapore, Republic of Singapore.

#### Abstract

Young (less than 8 weeks old) immunocompetent BALB/c mice became infected with *Blastocystis hominis* after inoculation of fecal cysts orally and of in vitro axenic-culture forms intracecally. This study confirmed that the fecal cyst was the form responsible for external transmission and that the mode of transmission was by the fecal-oral route. The infection was self-limiting and the infected BALB/c mice appeared normal except that some of them showed weight loss and lethargy. Both vacuolar and granular forms were found in the cecum, but only cyst forms were observed in the colon. Histological examination of the cecum and colon showed intense inflammatory-cell infiltration, edematous lamina propria, and mucosal sloughing. It is apparent that although *B. hominis* is not invasive, it is capable of causing pathogenesis in BALB/c mice.

PMID: 9134552 [PubMed - indexed for MEDLINE]



#### Publication Types, MeSH Terms

[Minerva Pediatr. 1996 Dec;48\(12\):571-3.](#)

#### 100. [*Blastocystis hominis* infection: a case report].

[Article in Italian]

[Antonelli F](#), [Cantelli L](#), [De Maddi F](#), [Lamba M](#).

XXIX Divisione Pediatria, Azienda Ospedaliera A. Cardarelli, Napoli.

#### Abstract

*Blastocystis hominis* has long been described as a non-pathogenetic protozoan parasite until recently, when claims have been made that it could be the cause of intestinal disorders. The clinical picture of *B. hominis* consists of non specific abdominal pain, watery diarrhea, anorexia, vomiting and weight loss. Rarely a more invasive form of the

disease with rectal bleeding can occur. We describe the case of a ten year-old girl who was admitted to our hospital for diarrhea, abdominal pain and fever. The presence of *B. hominis* was demonstrated in her stools. The patient responded favourably to treatment with metronidazole. We feel that our observation is an additional support to recognition of *B. hominis* as a human pathogen.

PMID: 9091775 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms, Substances

- [Ann Intern Med.](#) 1996 Nov 15;125(10):860-1.

101. **Hemorrhagic proctosigmoiditis and Blastocystis hominis.**

[Yarze JC.](#)

#### Comment on

[Ann Intern Med.](#) 1996 Jan 15;124(2):278-9.

PMID: 8929001 [PubMed - indexed for MEDLINE] [Free full text](#)



#### Publication Types, MeSH Terms

- [Nippon Shokakibyō Gakkai Zasshi.](#) 1996 Sep;93(9):655-60.

102. **[Case report of colitis associated with Blastocystis hominis infection].**

[Article in Japanese]

[Horiki N](#), [Maruyama M](#), [Itoh T](#), [Fujita Y](#), [Yonekura T](#), [Minato Y](#), [Kaneda Y](#).

Department of Internal Medicine, St Luke's International Hospital.

PMID: 8905973 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms

- [J Infect.](#) 1996 Jul;33(1):57-9.

103. **Severe Blastocystis hominis in an elderly man.**

[Levy Y](#), [George J](#), [Shoenfeld Y](#).

Department of Medicine B, Sheba Medical Center, Tel-Hashomer, Israel.

#### Abstract

We describe a unique case of severe *Blastocystis hominis* infection in an elderly man with severe dehydration, marked leukocytosis and hypoalbuminaemia after antibiotic treatment for right pneumonia. The patient recovered after treatment with metronidazole. This case presentation demonstrates the ability of *B. hominis* to induce severe gastrointestinal manifestations and general deterioration, particularly in light of the controversy surrounding its possible potential pathogenicity. We believe, therefore that aggressive treatment with metronidazole should be instituted, following demonstration of the parasite in the stools, if diarrhoea is protracted, since it may well be attributed to *Blastocystis* infection.

PMID: 8842998 [PubMed - indexed for MEDLINE]



#### Publication Types, MeSH Terms, Substances

- [Recenti Prog Med.](#) 1995 Oct;86(10):398-400.

104. **Serum antibody detected by fluorescent antibody test in patients with symptomatic Blastocystis hominis infection.**

[Garavelli PL](#), [Zierdt CH](#), [Fleisher TA](#), [Liss H](#), [Nagy B](#).

Divisione di Malattie Infettive, Ospedale Generale, Alessandria.

PMID: 7501905 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms, Substances

■ [J Parasitol.](#) 1995 Feb;81(1):127-9.

105. **Enzyme-linked immunosorbent assay for detection of serum antibody to *Blastocystis hominis* in symptomatic infections.**

Zierdt CH, Zierdt WS, Nagy B.

Clinical Pathology Department, National Institutes of Health, Bethesda, Maryland 20892.

#### Abstract

An enzyme-linked immunosorbent assay was devised in order to search for antibodies against *Blastocystis hominis* in infected humans. Reaction proteins were obtained from washed, axenic *B. hominis* cells, as sonicate. Sonicate was diluted to provide 17 and 34 micrograms of protein per well. Dilutions of patients' sera were applied, followed by phosphatase-conjugated goat anti-human serum and phosphatase substrate. Color was measured at 405 microns wavelength. Immunoglobulin G antibodies to high titers were found. Of 30 sera tested from 28 patients, 3 were negative at the 1/50 threshold dilution, 8 were positive at 1/50, 3 at 1/100, 2 at 1/200, 3 at 1/400, 6 at 1/800, and 5 at 1/1,600. Normal sera (42 blood bank sera) were all negative at 1/50. Each serum was subjected to multiple testing. Duplicate tests were included for each run, and runs were made from 4 to 6 for each serum. *Blastocystis hominis* is increasingly recognized to be a cause of human enteric disease, with symptoms often like those in giardiasis. Demonstration of strong antibody response is consistent with this view.

PMID: 7876972 [PubMed - indexed for MEDLINE]

### MeSH Terms, Substances

■ [J Clin Microbiol.](#) 1994 Nov;32(11):2865-6.

106. **Intestinal colonization of symptomatic and asymptomatic schoolchildren with *Blastocystis hominis*.**

Nimri L, Batchoun R.

Department of Biological Sciences, Jordan University of Science and Technology, Irbid.

#### Abstract

A study of single stool specimens was done to determine the prevalence of intestinal parasites among 1,000 primary school children. A questionnaire was completed by each child's parents. Specimens were examined by using wet-mount preparation, formaline-ether concentration, and Sheather's flotation technique. Trichrome and acid-fast stains were done. *Blastocystis hominis* was observed in 203 (20.3%) of the specimens examined, and 175 specimens contained this organism in the absence of other pathogenic parasites. Older children had fewer *B. hominis* infections (6 to 7 years old, 50% infection rate; 8 to 9 years, 27.5%; 10 to 12 years, 9.5%). The most common complaints reported by 75 children harboring the parasite were a mild recurrent diarrhea, abdominal pain, nausea, anorexia, and fatigue. Blastocystosis is quite common among schoolchildren. Contaminated drinking water is suspected to be the source of infection.

PMID: 7852590 [PubMed - indexed for MEDLINE] PMCID: PMC264178 [Free PMC Article](#)



### MeSH Terms

■ [Am J Med Sci.](#) 1994 Aug;308(2):96-101.

107. **Blastocystis hominis infection and intestinal injury.**

Zuckerman MJ, Watts MT, Ho H, Meriano FV.

Department of Medicine, Texas Tech University Health Sciences Center, El Paso 79905.

#### Abstract

*Blastocystis hominis* is an enteric protozoan associated with clinical illness. To determine the prevalence of intestinal injury in patients with *B. hominis* infection, the authors prospectively evaluated 18 patients with *B. hominis* infection by endoscopy and a test of intestinal permeability. Seventeen patients had gastrointestinal symptoms. Colonic mucosa appeared normal by lower endoscopy in 12 of 13 patients, and was friable slightly in 1. Duodenal mucosa was normal

by upper endoscopy in nine patients. Pathologic examination of mucosal biopsy specimens did not demonstrate evidence of mucosal invasion. 51Cr-edetic acid (51Cr-EDTA) was given to the 18 patients with stools positive for *B. hominis* and to 32 healthy control subjects. Approximately 100 uCi of 51Cr-EDTA was given orally after an overnight fast, and urine was collected for the following 24 hours. Mean 24-hour urinary excretion of 51Cr-EDTA, calculated as a percent of the administered dose, was 1.31% (0.34-2.76%) in patients with *B. hominis* infection and 1.99% (0.59-3.48%) in the control subjects. The intestinal permeability to 51Cr-EDTA in blastocystis-infected individuals was not increased, but was decreased significantly compared with healthy subjects ( $p < 0.005$ ). Therefore, in a group of symptomatic patients with *B. hominis* infection, endoscopy typically did not show evidence of significant intestinal inflammation, and results of intestinal permeability testing with 51Cr-EDTA did not suggest impaired barrier function of the intestinal mucosa. The clinical literature on *B. hominis* infection and intestinal injury is reviewed.

PMID: 8042662 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms, Substances

■ [Arch Pediatr Adolesc Med.](#) 1994 Aug;148(8):882-5.

#### 108. **Invasive Blastocystis hominis infection in a child.**

al-Tawil YS, Gilger MA, Gopalakrishna GS, Langston C, Bommer KE.

Department of Pediatrics, Baylor College of Medicine, Texas Children's Hospital, Houston 77030.

PMID: 8044274 [PubMed - indexed for MEDLINE]



#### Publication Types, MeSH Terms, Substances

■ [J Infect.](#) 1994 Mar;28(2):151-4.

#### 109. **Incidence of Blastocystis hominis in patients with diarrhoea.**

Logar J, Andlovic A, Poljsak-Prijatelj M.

Department of Parasitology, Medical Faculty, University of Ljubljana, Slovenia.

#### Abstract

We studied the occurrence of the parasite *Blastocystis hominis* in 1066 stool specimens from patients with diarrhoea, and investigated the relationship between the presence of *B. hominis* in the faeces and the age of patients. The parasite was recovered from 3.7% samples, but as the sole species of micro-organism in the stool it was recovered from 1% samples. There was no statistically significant difference in the number of *B. hominis*-positive stools between the younger and the older patients ( $P < 0.25$ ), yet in the latter, *B. hominis* was more frequently identified as the only species of micro-organism as compared with the younger group ( $P < 0.005$ ). The presence of *B. hominis* in faecal samples of patients with diarrhoea harbouring no other intestinal pathogens suggests an aetiology that should receive more attention in Slovenia.

PMID: 8034994 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms

■ [Z Rheumatol.](#) 1994 Mar-Apr;53(2):83-5.

#### 110. **[Blastocystis hominis as a rare arthritogenic pathogen. A case report].**

[Article in German]

Krüger K, Kamilli I, Schattenkirchner M.

Rheuma-Einheit und Medizinische Poliklinik, Ludwig-Maximilians-Universität München.

#### Abstract

*Blastocystis hominis*, a protozoon considered to be a nonpathogen intestinal commensal, is now discussed to be a cause of intestinal infection under certain circumstances, e.g., immunosuppression. There are two published cases of *Blastocystis* infection complicated by arthritis which was classified as "reactive" in one case, "infectious" in the other. We report a third case: A 46-year-old female patient developed a chronic diarrhea and oligoarthritis some days after returning from a trip to Senegal. Arthritis was refractory against treatment with NSAID and corticosteroids. Finally, a 3-week course of treatment with metronidazole resulted in a complete remission of arthritis, gastrointestinal symptoms, and inflammation signs (ESR, CRP). The course in our case, as well as the detection of *Blastocystis*

hominis in synovial fluid in another case, implicate an infectious rather than a reactive etiology of arthritis.

PMID: 8023590 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms, Substances

[J Clin Microbiol.](#) 1993 Oct;31(10):2706-8.

#### 111. **Evidence of an epidemic of Blastocystis hominis infections in preschool children in northern Jordan.**

[Nimri LF.](#)

Department of Biological Sciences, Faculty of Science, Jordan University of Science and Technology, Irbid.

#### Abstract

*Blastocystis hominis* is now gaining acceptance as an agent of human intestinal disease. A case-control study of the cause of gastroenteritis in children less than 6 years old was conducted. A total of 500 stool specimens were examined by wet mount preparation, formalin-ether concentration, Sheather's sugar flotation technique, and permanent stains when necessary. *B. hominis* was found in 63 (25%) of 250 stool specimens of the cases examined; 38 (15%) of these specimens contained this parasite alone. The appearance of severe symptoms was associated with increased numbers of the parasite in the diarrheic specimens (more than five parasites per field at a magnification of x 400). The most common symptoms were abdominal pain, recurrent diarrhea, cramps, anorexia, and fatigue. Contaminated water was suspected to be the major source of infection, since several cases were associated with *Giardia* infection. These findings support the concept of *B. hominis* pathogenicity in children with gastroenteritis.

PMID: 8253970 [PubMed - indexed for MEDLINE] PMCID: PMC265984 [Free PMC Article](#)



#### Publication Types, MeSH Terms

[Allergol Immunopathol \(Madr\).](#) 1993 Jul-Aug;21(4):149-51.

#### 112. **Urticaria by Blastocystis hominis. Successful treatment with paromomycin.**

[Armentia A](#), [Méndez J](#), [Gómez A](#), [Sanchís E](#), [Fernández A](#), [de la Fuente R](#), [Sánchez P](#).

Allergy Unit, Río Hortega Hospital, Valladolid, Spain.

#### Abstract

Urticaria and angioedema are easily recognized disorders, but in at least 70 percent of individuals, chronic episodes of urticaria are of unknown causes. We present 10 cases of chronic urticaria associated parasitization by *blastocystis hominis*. This parasite has not been previously related with urticaria. Both intestinal parasitization as well as urticaria responded successfully to paromomycin sulfate.

PMID: 8237719 [PubMed - indexed for MEDLINE]

#### MeSH Terms, Substances

[Ann Intern Med.](#) 1993 Jun 15;118(12):985-6.

#### 113. **Antibody response to Blastocystis hominis infections.**

[Zierdt CH](#), [Nagy B](#).

PMID: 8489119 [PubMed - indexed for MEDLINE] [Free full text](#)



#### Publication Types, MeSH Terms, Substances

[Pediatr Infect Dis J.](#) 1993 Apr;12(4):345-7.

#### 114. **Neonatal Blastocystis hominis diarrhea.**

[Galantowicz BB](#), [Illueca MD](#), [Levy J](#), [Rayburn JL](#), [Weinstock DJ](#).

Department of Pediatrics, New York Hospital-Cornell University Medical Center, New York 10021.

PMID: 8483630 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

■ [Clin Pediatr \(Phila\)](#). 1993 Feb;32(2):91-6.

#### 115. **Prevalence and characteristics of Blastocystis hominis infection in children.**

[O'Gorman MA](#), [Orenstein SR](#), [Proujansky R](#), [Wadowsky RM](#), [Putnam PE](#), [Kocoshis SA](#).

Department of Pediatrics, University of Pittsburgh School of Medicine, Children's Hospital of Pittsburgh, Pennsylvania 15213.

### Abstract

*Blastocystis hominis*, a protozoan whose pathogenicity has been questioned, is sometimes found in the human gastrointestinal tract. We sought to determine the prevalence of *Blastocystis* in stool and to characterize clinical features of infection with *Blastocystis* in children. Forty-six (3%) of 1,736 patients undergoing fecal microscopy at Children's Hospital of Pittsburgh between January 1, 1985, and December 31, 1988, harbored *Blastocystis*. Of these 46 children, 75% had exposure to well water or had been in developing countries. Thirty-nine of the 46 (85%) experienced gastrointestinal symptoms, such as abdominal pain, diarrhea, vomiting, and weight loss. *Blastocystis* was the only parasite found in 35 of those 39 symptomatic children. Symptoms resolved within one month in 90% of patients receiving antiparasitic pharmacotherapy, but in only 58% ( $P < .04$ ) of those receiving no therapy. We conclude that children infected with *Blastocystis* often experience gastrointestinal symptoms and that treatment increases the rate of symptomatic improvement. We speculate that *Blastocystis* is a human pathogen.

PMID: 8432086 [PubMed - indexed for MEDLINE]

### MeSH Terms, Substances

■ [An Esp Pediatr](#). 1993 Jan;38(1):13-6.

#### 116. **[Blastocystis hominis and abdominal pain in childhood].**

[Article in Spanish]

[Fleta Zaragoza J](#), [Clavel Parrilla A](#), [Castillo García FJ](#), [Bueno Lozano M](#), [Sarría Chueca A](#).

Departamento de Pediatría, Hospital Clínico Universitario, Facultad de Medicina, Universidad de Zaragoza.

### Abstract

We report the clinical features observed in 10 children, ranging from 5 1/12 to 13 7/12 years of age, with intestinal infections caused by *Blastocystis hominis*. A parasitological study of the stools was made by using the ethyl-acetate formol concentration technique and a count of the number of *B. hominis* per field was performed. In 8 of the cases, no other enteropathogens (viruses, bacteria or other parasites) were found, whereas in 2 cases *Giardia lamblia* was also isolated. Nine out of ten of the patients presented with abdominal pain. In three of the cases it appeared as a pseudo-appendicular ailment which led to an appendectomy. Those children who were treated with metronidazole and those who were not treated with antibiotic recovered satisfactorily.

PMID: 8439071 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms, Substances

■ [Ital J Gastroenterol](#). 1993 Jan;25(1):33-6.

#### 117. **Blastocystis hominis and blastocystosis (Zierdt-Garavelli disease).**

[Garavelli PL](#), [Libanore M](#).

Divisione di Malattie Infettive, Ospedale SS. Antonio e Biagio, Alessandria, Italy.

PMID: 8428021 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

■ [Eur J Epidemiol](#). 1992 Jul;8(4):553-9.

#### 118. **Epidemiology and clinical significance of Blastocystis hominis in different**

## **population groups in Salamanca (Spain).**

Martín-Sánchez AM, Canut-Blasco A, Rodríguez-Hernández J, Montes-Martínez I, García-Rodríguez JA.

Department of Microbiology, Clinical Hospital, Salamanca, Spain.

### **Abstract**

A prospective study was carried out to investigate the epidemiology and clinical significance of *Blastocystis hominis* in the following groups of the population of the city of Salamanca (Spain): in children attending 11 day care centres and 7 primary schools, two fecal samples were obtained from each child, and in 1231 patients attending the Clinical Hospital. A *B. hominis* incidence of 5.3-10.3% was found in the day care centres and an incidence rate of 13.4-19.4% was found in the primary schools. All the cases were observed in asymptomatic children. The incidence of *B. hominis* was greater in children older than 3 years in the day care centres and in the 10-14 year-old group in the primary schools. A heavier parasitization was observed in the boys than in the girls and in the students of schools in areas of low socio-economic level. *B. hominis* was identified in 40 patients attending the Clinical Hospital (3.25% of all those studied). The maximum peak of incidence was found in subjects with ages between 10 and 14 years. A follow up study was performed on 18 patients parasitized exclusively by *B. hominis*; 7 of these were considered to have acute gastroenteritis and one chronic gastroenteritis associated with the protozoan. No statistically significant association was observed between the number of *B. hominis* cells and the presence of diarrhoea. Our results show that despite the high number of asymptomatic carriers of *B. hominis* in the juvenile population, this protozoan may be, on other occasions, responsible for gastrointestinal symptoms.

PMID: 1397225 [PubMed - indexed for MEDLINE]

### **MeSH Terms**

■ [Zentralbl Bakteriol.](#) 1992 Jun;277(1):112-8.

## 119. **Varying incidence of *Blastocystis hominis* in cultures from faeces of patients with diarrhoea and from healthy persons.**

Kukoschke KG, Müller HE.

Staatliches Medizinaluntersuchungsamt, Braunschweig, Germany.

### **Abstract**

A study was performed on the frequency of *Blastocystis hominis* in the faeces from 100 patients suffering from diarrhoea and from 100 healthy persons. Surprisingly, an increased detection rate was observed in samples from healthy persons after anaerobic cultivation. This increased frequency is obviously not dependent on the kind of serum used as a culture supplement and raises the question whether the protozoa morphologically described as *B. hominis* represent a homogenous species. When rabbit and horse sera were used instead of human serum for cultivation, in both groups the share of positive cultures increased and more large forms of *B. hominis* cells were observed. Biological implications are being discussed.

PMID: 1520961 [PubMed - indexed for MEDLINE]

### **Publication Types, MeSH Terms, Substances**

■ [Acta Trop.](#) 1991 Nov;50(1):39-49.

## 120. **Longitudinal study of young children in Kenya: intestinal parasitic infection with special reference to *Giardia lamblia*, its prevalence, incidence and duration, and its association with diarrhoea and with other parasites.**

Chunge RN, Nagelkerke N, Karumba PN, Kaleli N, Wamwea M, Mutiso N, Andala EO, Gachoya J, Kiarie R, Kinoti SN.

Kenya Medical Research Institute, Medical Research Centre, Nairobi.

### **Abstract**

84 young children from a rural community, Nderu, in Kenya, were each followed for up to 10 months, from January to November 1987. Their ages ranged from 10 to 28 months over the period of study. Stools were obtained once a week, as were reports from the mothers about presence of abdominal complaints, including diarrhoea. A total of 2258 stools and 1873 reports were collected. 9 parasites were commonly encountered of which *Giardia lamblia* was the most frequent at 44.7%. The overall estimated number of new *Giardia* episodes per year per child was 2.77 +/- 2.22 SD and the mean estimated duration of infection was 75.25 +/- 73.84 SD days per child. The mean proportion of positive visits per child was 0.42 +/- 0.25 SD. *Giardia* trophozoites, *Trichomonas hominis*, *Chilomastix mesnili*, *Entamoeba histolytica*, *Blastocystis hominis* and *Hymenolepis nana* were all significantly associated with unformed stools and reports of diarrhoea. There was a significant probability of finding *Giardia* in stool within +/- 2 weeks of a

report of diarrhoea. Poly-parasitism was common and several paired associations were significantly positive, particularly between species of amoebae. Quantity of *Giardia* in stool (expressed as a 0 to 5+ score) was suppressed both by type and number of other parasites present.

PMID: 1686143 [PubMed - indexed for MEDLINE]



### MeSH Terms

■ [J Trop Med Hyg.](#) 1991 Apr;94(2):118-22.

#### 121. **Clinical report of *Blastocystis hominis* infection in children.**

Zaki M, Daoud AS, Pugh RN, al-Ali F, al-Mutairi G, al-Saleh Q.

Department of Paediatrics, Farwaniya Hospital, Kuwait.

#### Abstract

During a 9-month hospital-based survey, the intestinal parasite *Blastocystis hominis* was detected in high numbers (five or more organisms per oil immersion field) in faecal specimens from 39 (2%) of 1960 children under 13 years old. Abdominal pain or discomfort with or without diarrhoea was present in 32 children categorized as acute (14), subacute (7) or chronic (11) cases with respective mean ages of 6.4, 7.3 and 8.7 years. They included three with other enteropathogens (*Giardia lamblia*, *Cryptosporidium* sp. or *Hymenolepis nana*). The remaining seven children had no gastrointestinal symptoms. The 14 acute cases (symptoms duration 1-11 days) were characterized by cramp-like abdominal pain, watery diarrhoea and vomiting. The seven subacute (3-4 weeks) and 11 chronic (3-12 months) cases presented with abdominal discomfort and/or loose non-watery stools. Four complained of flatus and eosinophilia was noted in six. All symptoms resolved with eradication of *B. hominis* or reduction to low numbers after metronidazole chemotherapy (28 cases) or with no treatment (four cases). This study would appear to support the role of the parasite as an enteropathogen in some children. A case control study is clearly needed to clarify the status of *B. hominis* as a pathogen.

PMID: 2023289 [PubMed - indexed for MEDLINE]

### MeSH Terms, Substances

■ [Rev Latinoam Microbiol.](#) 1991 Apr-Sep;33(2-3):159-64.

#### 122. **[Importance of the diagnosis of *Blastocystis hominis* in the parasitological examination of feces].**

[Article in Spanish]

Ponce de León P, Svetaz MJ, Zdero M.

Facultad de Ciencias Bioquímicas y Farmacéuticas, Departamento de Microbiología, Universidad Nacional de Rosario, República Argentina.

#### Abstract

Feces of 798 male and female patients who attended the Parasitology Laboratory of the "Facultad de Ciencias Bioquímicas y Farmacéuticas de la Universidad Nacional de Rosario (República Argentina)" were examined. Out of the total number of samples, 281 were collected after a purgative, and 517 by serial collection. The samples were examined applying the routine parasitological analysis. Those which presented *Blastocystis hominis* were processed for their quantification and classification in different categories according to the number of cells per microscopic field with a magnification of 400 x. *B. hominis* appeared in 25.2% of the patients. Practically the same percentage was detected with either collection method. *B. hominis* was associated with other parasites, appearing as the only parasite in only 29.4% of the cases. Both its statistical association with the patient's age and its independence from sex were determined. The most frequent symptomatology in patients with *B. hominis* only was: abdominal pains, pruritus, flatulence, malaise, anorexia and diarrhea. Only 14.9% did not present any symptoms at all. The search for this protozoa should be a parasitological routine analysis since it is the cause of frequent intestinal disorders.

PMID: 1670481 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

■ [Arthritis Rheum.](#) 1991 Feb;34(2):251-3.

#### 123. **Reactive arthritis from *Blastocystis hominis*.**

Lakhanpal S, Cohen SB, Fleischmann RM.

PMID: 1994931 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

■ East Afr Med J. 1991 Feb;68(2):112-23.

124. **Intestinal parasites in a rural community in Kenya: cross-sectional surveys with emphasis on prevalence, incidence, duration of infection, and polyparasitism.**

Chunge RN, Karumba PN, Nagelkerke N, Kaleli N, Wamwea M, Mutiso N, Andala EO, Kinoti SN.

Kenya Medical Research Institute, Medical Research Centre, Nairobi, Kenya.

#### Abstract

A cross-sectional survey of intestinal parasitic infection in a rural community, Nderu, in Kiambu District, Kenya, was carried out in 1985 by examining 1129 individuals from 203 households (about 25% of the total population). This was followed by 3 more cross-sectional surveys, in January, May and October 1986, of 56 families comprising 461 individuals, who had also participated in the first survey. In the first survey, 81.4% of the sample was positive for at least one intestinal parasite and 78% was positive for intestinal protozoa. 72.7% of those infected had multiple infections. The prevalence of most of the protozoa increased with age but that of *Giardia lamblia* peaked in the 0 to 4 year class at 35.5%. Females were infected more often with several of the protozoa, but males with *Ascaris*. People living in larger households were more often infected with *Entamoeba histolytica* and *Iodamoeba butschlii*, while the opposite was true of *H. nana* and tended to be for *Giardia*. Significant positive associations between parasite species were common at all surveys, especially among the amoebae. The majority of negative associations were for *Giardia*. Unformed stools were significantly associated with *Giardia*, *Blastocystis*, and trophozoites of *Trichomonas hominis* and *Chilomastix mesnili*. *Endolimax nana* and *Entamoeba coli* were found more often in formed stools. Estimates of daily incidence, and duration of infection in days, were calculated for 11 parasites. The longest mean estimated duration of infection for any species was 237 +/- S.D. 151.4 days for *H. nana* and the shortest was 41.6 +/- S.D. 0.4 days for *T. hominis*.

PMID: 2040230 [PubMed - indexed for MEDLINE]

### MeSH Terms

■ Clin Microbiol Rev. 1991 Jan;4(1):61-79.

125. **Blastocystis hominis--past and future.**

Zierdt CH.

Microbiology Service, Clinical Pathology Department, National Institutes of Health, Bethesda, Maryland 20892, USA.

#### Abstract

The history of *B. hominis* is unique. Few infectious agents have provoked the many misconceptions that plague this enigmatic parasitic ameba. Conflicting descriptions of its nature and pathogenesis have continued throughout the 20th century. As seen by the greatly expanded number of reports in recent years, *B. hominis* is now a major subject of study, particularly for evidence of disease causation. Physicians are treating patients with intestinal disease caused by *B. hominis*. Many mild cases resolve in about 3 days without treatment, but others are acute and chronic disease is common. As with *E. histolytica*, the carrier state is often seen without symptoms. Treatment is usually with metronidazole, but emetine (for refractory infections), trimethoprim-sulfamethoxazole, and pentamidine are also effective. In fecal samples, this complex protozoan appears in a variety of cell forms which makes microscopic diagnosis difficult. As yet, no specific fluorescent-antibody test is available for diagnosis. A culture method to demonstrate the more easily recognized CB form is available, but probably not feasible for most diagnostic laboratories. The common cell forms are the CB form, the granular (mitochondria) form, and the ameba form. The unexpected size range of these forms in clinical material, from yeast size (ca. 7 microns) to giant cells of 20 to 40 microns, makes diagnosis difficult. Pseudopodia may be demonstrated by the ameba form in heated microscope stage culture chambers. The anaerobic *B. hominis* has no cyst form. Its mitochondria are uniquely anaerobic and have no cytochrome protein or oxidative mitochondrial enzymes. Because of its many cell forms and anaerobic mitochondria, *B. hominis* is an organism of great interest for morphologic and biochemical study. Reproduction is asexual, usually by binary fission. Shizogony occurs in cultured cells. The CB appears to be an organelle whose specific purpose is for reproduction by shizogony. From 2 to 30 progeny are derived from schizogony. The ameba form reproduces by plasmotomy; it has no CB. The pathology of *B. hominis* infections has been studied in gnotobiotic guinea pigs in which inflammation of the intestinal mucosa and invasion of the superficial layers were seen. Only limited studies of human pathology are available. Those who have studied mucosal histopathology report inflammation and cellular changes that resolve after treatment. More study in this area is strongly indicated (32, 44, 57, 62, 67, 75). Ultrastructural details of *B. hominis* major forms, except for the schizont, are complete. The organism has no cell

wall. The concentric CB takes up as much as 95% of the cell. The major organelles, which include multiple nuclei, Golgi apparatus, mitochondria, endoplasmic reticulum, fat, and other inclusions, are confined in two or four opposed pods in a thin band of peripheral cytoplasm between the spherical entire plasma membrane and the CB membrane. The pods bulge the CB membrane inward. There is evidence of a bacteroid endosymbiont. Education about *B. hominis* is needed. Entry of recent findings into new textbooks is imperative for its understanding among medical practitioners. Laboratory workers need to be aware of it for many reasons. The College of American Pathologists includes *B. hominis* in its proficiency testing samples and requires that it be reported from clinical samples.

PMID: 2004348 [PubMed - indexed for MEDLINE] PMCID: PMC358179 [Free PMC Article](#)



### Publication Types, MeSH Terms

- [J Chemother.](#) 1991 Jan;3 Suppl 1:245-6.

#### 126. **The therapy of blastocystosis.**

[Garavelli PL.](#)

Infectious Diseases Department, General Hospital, Alessandria, Italy.

#### Abstract

During the period 1985-1989 I observed 35 patients of both sexes and of all ages, who were suffering from signs and symptoms of clear blastocystosis, such as prevalingly watery diarrhea, abdominal pain, nausea, tenesmus, eosinophilia and fever. 5 of them showed concomitant diseases, like Acquired Immune Deficiency Syndrome (AIDS) or AIDS Related Complex (ARC), diabetes mellitus and nephrocarcinoma. By means of the administration of metronidazole 2 g/die for 5 days on average, I obtained the disappearance of *Blastocystis hominis* from the stools and the absence of the clinical symptomatology in 11 patients, while in another 7 the treatment did not prevent, in the following months, the arising of one or more clinical and microbiologic relapses.

PMID: 12041778 [PubMed - indexed for MEDLINE]

### MeSH Terms, Substances

- [Scand J Infect Dis.](#) 1991;23(3):389-90.

#### 127. **Blastocystis hominis may be a potential cause of intestinal disease.**

[Telalbasic S](#), [Pikula ZP](#), [Kapidzic M.](#)

University Medical Center, Clinic of Infectious Diseases, Sarajevo, Yugoslavia.

#### Abstract

*Blastocystis hominis* is a common inhabitant of the human bowel. It is now increasingly recognized as a potential cause of diarrhea. This article presents 12 cases of prolonged or recurrent diarrhea associated with *B. hominis* found in a large number. No other intestinal parasites were recognized. All patients responded to metronidazole. This report confirms that *B. hominis* may be a cause of intestinal disease.

PMID: 1882204 [PubMed - indexed for MEDLINE]

### MeSH Terms, Substances

- [Mil Med.](#) 1990 Sep;155(9):394-6.

#### 128. **Blastocystis hominis infection: signs and symptoms in patients at Wilford Hall Medical Center.**

[Wilson KW](#), [Winget D](#), [Wilks S.](#)

Wilford Hall Medical Center, Lackland AFB, TX 78236.

#### Abstract

*Blastocystis hominis* (*B. hominis*) is a protozoan that may inhabit the human gastrointestinal tract. In our study we reviewed the signs and symptoms of patients at Wilford Hall with stool specimens positive for *B. hominis*. These patients fell into four groups, HIV-positive adults, foreign nationals, children, and adults not known to be HIV positive. *B. hominis* caused an acute self-limited diarrheal illness, or chronic gastroenteritis with nausea, abdominal pain, and mild diarrhea. Metronidazole effectively relieved the symptoms and cleared the organism in some but not all patients.

PMID: 2120622 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms, Substances

■ [G E N](#). 1990 Jul-Sep;44(3):217-20.

129. **[Blastocystis hominis infection frequency: a year of study].**

[Article in Spanish]

[Castrillo de Tirado A](#), [González Mata AJ](#), [Tirado Espinoza E](#).

Dpto. de Medicina, Escuela de Medicina UCLA Barquisimeto, Venezuela.

#### Abstract

Since July 1987 to June 1988, out of a total of 2,009 stool examinations performed at a private laboratory, in Barquisimeto, Venezuela, we could identify *Blastocystis hominis* in 206 of them, using the methods of wet preparation with S.S.F., Iugol and Quensel. Clinical information was obtained in 73 patients. The group more affected was the one older than 12 years of age. We suggest the investigation and to report *B. hominis* in the feces test, because in presence of clinic manifestations and absence of other enteropathogenic can be the responsible.

PMID: 2152310 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms

■ [Schweiz Med Wochenschr](#). 1990 May 19;120(20):742-4.

130. **[Blastocystis hominis in feces. An assessment of 56 cases].**

[Article in German]

[Krech T](#), [Nguyen XM](#), [Spicher H](#).

Institut für Hygiene und Medizinische Mikrobiologie der Universität, Inselspital Bern.

#### Abstract

Over a twelve-month period all 3918 stool samples sent to our institute were investigated for *Blastocystis hominis*. This protozoon was detected in 384 samples. The stools of 50 healthy controls were negative. In 56 positive cases detailed clinical information was obtained: 26 of these patients had diarrhea, while only extraintestinal symptoms had been recorded in 10 cases. Blood eosinophilia was observed in 8 patients. Of 16 specifically treated patients, 10 responded to therapy. Although the pathogenic significance of *B. hominis* is still unclear, we believe our observations justify antibiotic therapy in selected cases.

PMID: 2349459 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms, Substances

■ [West Indian Med J](#). 1990 Mar;39(1):57-8.

131. **[Blastocystis hominis in two children of one family.]**

[Bratt DE](#), [Tikasingh ES](#).

Department of Child Health, U.W.I., Port-of-Spain General Hospital, Trinidad.

#### Abstract

Two apparently healthy children from the same family were found to have moderate to heavy *Blastocystis hominis* in their stool samples whilst being investigated for intestinal symptoms: sporadic, painless, rectal bleeding in one and persistent diarrhoea in the other. After treatment with metronidazole, they had no further signs, and stool samples became negative. Eighteen months later, both were asymptomatic, and stool samples continued to be negative for the parasite.

PMID: 2333700 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms, Substances

■ [J Clin Microbiol](#). 1990 Jan;28(1):116-21.

132. **[Epidemiology and pathogenicity of Blastocystis hominis.]**

[Doyle PW](#), [Helgason MM](#), [Mathias RG](#), [Proctor EM](#).

Metro-McNair Clinical Laboratories, Vancouver, British Columbia, Canada.

### Abstract

A prospective study was performed on a large outpatient population to evaluate the epidemiology and pathogenicity of *Blastocystis hominis*. Patients with stool specimens positive for *B. hominis* and negative for other bacterial and parasitic pathogens were sent a questionnaire and were requested to submit a follow-up specimen for ova-and-parasite examination. *B. hominis* was identified in 530 of 16,545 specimens (3.2%). There was a spectrum of clinical-pathological presentations in the 143 patients evaluated. An asymptomatic carrier state was seen in 19 patients. Fifteen patients had an illness consistent with acute self-limited *B. hominis* gastroenteritis, and 21 patients had chronic gastroenteritis associated with *B. hominis*. In the epidemiological evaluation of 130 patients, the most common symptoms were watery diarrhea, abdominal pain, and gas. We did not find a statistically significant association between the number of organisms present and the disease state. In summary, our results are consistent with a role for *B. hominis* in acute and chronic gastroenteritis; however, further detailed studies are necessary to determine whether that role is one of association or causation.

PMID: 2298869 [PubMed - indexed for MEDLINE] PMCID: PMC269548 [Free PMC Article](#)



### MeSH Terms

[Lancet](#). 1989 Dec 9;2(8676):1394.

### 133. Family outbreak of *Blastocystis hominis* associated gastroenteritis.

[Guglielmetti P](#), [Cellesi C](#), [Figura N](#), [Rossolini A](#).

PMID: 2574330 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms

[J Clin Microbiol](#). 1989 Nov;27(11):2407-9.

### 134. Clinical significance of *Blastocystis hominis*.

[Qadri SM](#), [al-Okaili GA](#), [al-Dayel F](#).

Department of Pathology, King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia.

### Abstract

A total of 19,252 stool specimens from 12,136 patients were examined by direct microscopy and the ethyl acetate-Formalin concentration method during the last 2 years. All liquid specimens and those in which parasite identification was difficult or equivocal were also examined in trichrome-stained preparations. A total of 3,070 intestinal parasites were seen in 2,889 patients. *Blastocystis hominis* was found in fecal material from 647 patients (17.5%). A total of 132 cases (25.6%) were observed to be in association with other enteric pathogens. *B. hominis* in large numbers was present as the only parasite or with other commensals in 515 specimens from patients (79.6%). Of these patients, 239 (46.4%) had symptoms, the most common being abdominal pain (87.9%), constipation (32.2%), diarrhea (23.4%), alternating diarrhea and constipation (14.5%), vomiting (12.5%), and fatigue (10.5%). Forty-three (18%) of the patients were treated with metronidazole (0.5 to 1.0 g/day) because of recurrent symptoms and the presence of large numbers of *B. hominis* cells in repeated stool specimens. After 7 to 10 days of treatment, all patients became asymptomatic with negative stools on follow-up examinations for *B. hominis*.

### Comment in

[J Clin Microbiol](#). 1990 Oct;28(10):2379-80.

[J Clin Microbiol](#). 1990 May;28(5):1085-6.

PMID: 2808664 [PubMed - indexed for MEDLINE] PMCID: PMC267045 [Free PMC Article](#)



### MeSH Terms

[West J Med](#). 1989 Nov;151(5):518-9.

135. **Blastocystis hominis--a potential intestinal pathogen.**

Babb RR, Wagener S.

**Abstract**

The parasite *Blastocystis hominis* has been found in 10% to 18% of stool specimens submitted to microbiology laboratories. Controversy exists as to whether this organism can cause illness in humans. We have reviewed the records of 65 symptomatic patients with *B hominis* in their stool. We conclude that *B hominis* is a potential pathogen that may or may not require drug therapy depending on the overall clinical circumstances, the severity of symptoms, and the presence of other pathogenic organisms.

**Comment in**

West J Med. 1990 Jun;152(6):721.

PMID: 2603418 [PubMed - indexed for MEDLINE] PMCID: PMC1026784 [Free PMC Article](#)



**MeSH Terms, Substances**

136. [Am J Gastroenterol.](#) 1989 Jul;84(7):798-9.

**Terminal ileitis associated with Blastocystis hominis infection.**

Tsang TK, Levin BS, Morse SR.

Department of Internal Medicine, Evanston Hospital-Northwestern University McGaw Medical Center, Illinois.

**Abstract**

We report on the previously unobserved clinical presentation of terminal ileitis secondary to *Blastocystis hominis* in a 37-yr-old white male. When the patient was treated with metronidazole, the symptoms improved and the radiographic abnormalities resolved. We believe that this is the first well-documented instance of terminal ileitis secondary to *B. hominis*.

PMID: 2741890 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Substances**

137. [Rev Ig Bacteriol Virusol Parazitol Epidemiol Pneumoftiziol Bacteriol Virusol Parazitol Epidemiol.](#) 1989 Jul-Sep;34(3):285-8.

**[Observations on 4 atypical cases of blastocystosis].**

[Article in Romanian]

Muntean E, Boceat T.

**Abstract**

The paper reports on four atypical cases of blastocystosis with prevalence of digestive and cutaneous disorders and of the allergic and general phenomena. The diagnosis could be established only after revealing *Blastocystis hominis* in the fecal parasitologic examination. The disappearance, in all the four cases, of varied clinical, delayed signs after treatment with metronidazol and stamycine (in two or even four repeated treatment schedules at 10 days' interval) is the proof that *Bl. hominis* might be the agent (unique or associated with other parasites) of some polymorphous disorders. Our findings are a call to specialists and clinicians for investigating the parasite and using an adequate treatment.

PMID: 2617001 [PubMed - indexed for MEDLINE]

**Publication Types, MeSH Terms, Substances**

138. [Schweiz Med Wochenschr.](#) 1989 Apr 15;119(15):457-60.

**[Blastocystis hominis, a parasitic cause of diarrhea].**

[Article in German]

Nguyen XM, Krech T.

Institut für Hygiene und Medizinische Mikrobiologie der Universität Bern.

**Abstract**

The frequency of detection of *Blastocystis hominis* in the stools of patients with gastroenteritis is reported. Over a twelve-month period *B. hominis* was identified in the stools of 69 (4.72%) out of 1460 patients. Of these 69 positive samples, 45 (65%) contained *B. hominis* alone and in 24 (35%) it was present together with other parasites such as *Lambliia intestinalis*, *Entamoeba histolytica*, *Entamoeba coli*, *Endolimax nana*, *Iodamoeba buetschlii*, *Ancylostoma duodenale*, *Ascaris lumbricoides*, *Trichuris trichiura*, and *Hymenolepis nana*. In 19 of the 69 patients with *B. hominis*, the parasite was found only in small numbers but as the sole pathogen. It is still unclear whether *B. hominis* must be considered a pathogenic agent; the clinician should however be aware of this parasite as a possible cause of gastroenteritis, particularly when no other pathogen can be identified.

PMID: 2717900 [PubMed - indexed for MEDLINE]

#### Publication Types, MeSH Terms

Arch Intern Med. 1988 May;148(5):1064.

#### 139. Presumptive evidence for *Blastocystis hominis* as a cause of colitis.

Russo AR, Stone SL, Taplin ME, Snapper HJ, Doern GV.

Department of Medicine, University of Massachusetts Medical Center, Worcester 01655.

#### Abstract

A patient with persistent diarrhea was found to have biopsy-proved colitis with large numbers of the protozoan *Blastocystis hominis* present in stool. Extensive evaluation failed to reveal any other potential etiologic agent of acute colitis. Following treatment with a course of metronidazole, the patient became asymptomatic, *B. hominis* was no longer present in stool, and results of a repeated biopsy were normal. These observations are consistent with the role of *B. hominis* as a gastrointestinal pathogen.

PMID: 3365077 [PubMed - indexed for MEDLINE]



#### Publication Types, MeSH Terms

Diagn Microbiol Infect Dis. 1987 Dec;8(4):235-44.

#### 140. Epidemiology and clinical features associated with *Blastocystis hominis* infection.

Kain KC, Noble MA, Freeman HJ, Barteluk RL.

Division of Medical Microbiology, University of British Columbia, Vancouver, Canada.

#### Abstract

A retrospective chart review was performed on 100 patients infected with *Blastocystis hominis* (Bh) and 50 randomly selected age and sex matched controls to examine the clinical and epidemiologic features associated with this organism. The finding of greater than 5 Bh per oil immersion field (1,000 X) was significantly associated with acute presentation of symptoms but was not predictive of the presence of gastrointestinal symptoms. Of patients infected with Bh, 57.5% had recently travelled to the tropics or had consumed untreated water as compared to 12.2% of controls (p less than 0.001). Forty Bh-positive patients were assessed on more than one occasion. No significant differences appeared to exist in the clinical responses of those treated with Metronidazole (14/18; 77.8%) or with dietary management (6/6; 100%) as compared with those not receiving treatment (13/16; 81.2%). Patients tended to become less symptomatic with time and in the absence of specific treatment, and therefore treatment with Metronidazole may not be warranted in light of the natural history of Bh infection.

PMID: 3449317 [PubMed - indexed for MEDLINE]

#### MeSH Terms, Substances

South Med J. 1987 Jul;80(7):931-2.

#### 141. Diarrhea due to *Blastocystis hominis*: an old organism revisited.

Diaczok BJ, Rival J.

#### Abstract

We have reported a case of diarrhea caused by *Blastocystis hominis*, an intestinal protozoan parasite of man. The organism is present in small numbers in up to one fifth of stool samples in hospitalized patients, but is associated with diarrhea in only heavily infested patients. Typical symptoms include diarrhea, crampy abdominal pain, nausea,

vomiting, low-grade fever, gas, malaise, and chills. Fecal leukocytes are occasionally seen. The pathophysiologic mechanism of the diarrhea is not clear. Not all patients having large parasite burdens are symptomatic. Metronidazole, 1 to 2 gm/day orally in divided doses, is the treatment of choice.

PMID: 3603119 [PubMed - indexed for MEDLINE]



### Publication Types, MeSH Terms

[Clin Exp Pharmacol Physiol](#). 1987 Apr;14(4):333-5.

142. **Blastocystis hominis: evidence for human pathogenicity and effectiveness of metronidazole therapy.**

[Guirges SY](#), [Al-Waili NS](#).

Private Clinic, Al-Mashtel, New Baghdad, Iraq.

### Abstract

1. Clinical symptoms and oral treatment with metronidazole were studied in 103 patients with pure infections by *Blastocystis hominis*. 2. The results showed that excessive flatulence is the chief gastrointestinal symptom associated occasionally with diarrhoea and abdominal cramps. All the patients showed good responses with treatment of metronidazole and 74 patients whose stools were reexamined 1-2 months after the treatment demonstrated no signs of infections. 3. It is concluded that *B. hominis* is a pathogenic intestinal parasite and the infection could be eradicated successfully by oral metronidazole.

PMID: 3665198 [PubMed - indexed for MEDLINE]

### MeSH Terms, Substances

[Schweiz Rundsch Med Prax](#). 1986 Nov 4;75(45):1367-8.

143. **[A case from practice (66). Patient: E.K., born Oct. 10, 1948, housewife (Blastocystis hominis infection)].**

[Article in German]

[Binz P](#).

PMID: 3787022 [PubMed - indexed for MEDLINE]

### Publication Types, MeSH Terms

[J Clin Microbiol](#). 1986 Oct;24(4):548-50.

144. **Association of Blastocystis hominis with signs and symptoms of human disease.**

[Sheehan DJ](#), [Raucher BG](#), [McKittrick JC](#).

### Abstract

Purged stools from 389 patients were evaluated microscopically for the presence of *Blastocystis hominis*. A total of five or more *B. hominis* cells per 40X field were observed in 43 patients (11%), and *B. hominis* was the only intestinal parasite present in 23 (6%) of these patients. Of the 23 patients, 19 had symptoms which included abdominal discomfort (15 patients), anorexia (10 patients), diarrhea (9 patients), and flatus (9 patients). The remaining four patients were asymptomatic. The proportion of eosinophils in the peripheral blood ranged from 4 to 12% in 11 (58%) of the symptomatic patients. Absolute eosinophil counts were greater than 250/microliter in 8 patients and greater than 400/microliter in 5 patients. Eosinophilia was not observed in the remaining symptomatic or asymptomatic patients. This study supports the emerging concept of the role of *B. hominis* as an intestinal parasite causative of human disease.

PMID: 3771743 [PubMed - indexed for MEDLINE] PMCID: PMC268968 [Free PMC Article](#)



### MeSH Terms