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Controversial Pathogen: *Blastocystis hominis* Prevalence from Patients Attending a Tertiary Care Hospital Lucknow

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ABSTRACT
Blastocystis hominis (B. hominis) is one of the most common enteric parasite and a highly controversial protozoan parasite regarding its pathogenicity. It has been variably regarded as a commensal and as a pathogen. The aim of this study was to determine the prevalence of B. hominis in relation to sex and age. The purpose of this study was to get a clear idea about the existence of B. hominis in symptomatic patients and their pathogenic effect in absence of other known pathogen. The present study was conducted in the Department of Microbiology of a tertiary care Hospital in Lucknow, India. Samples were collected after taking informed consent. A total of 640 stool samples were examined microscopically Out of all the samples examined 139 samples were found to be positive for at least one parasite. Among them B. hominis was found in fecal material of 41 patients (29.4%). In the present study common symptoms associated with B. hominis infection were abdominal pain (100 %), diarrhea (78%), Nausea (65.8%), Loss of weight (43.9%), Vomiting (21.9%), Constipation (21.9%). All the 41(29.4%) patients were treated with metronidazole 250 to 500 mg BID for 5-7 days because of symptoms and the presence of B. hominis stool specimens. After 5-7 days of treatment, all patients became asymptomatic with stools negative for B. hominis on follow-up examinations.
KEYWORDS: *B.hominis Pathogenicity, Controversial Protozoan Parasite.*

INTRODUCTION

B. hominis is a unicellular protozoan and one of the most common parasite found in the human intestinal tract. *B. hominis* was first described 100 years ago but surprisingly little is known about its pathogenicity [1-5]. Pathogenic potential of *B. hominis* in human enteric disease had been reported in the older literature [6-9] and most of the

textbooks described it as a commensal [10-12]. *B. hominis* is now getting acceptance as an agent of human intestinal disease [13-14]. Infection with B. *hominis* has a worldwide distribution and occurs in both children and adults. In developing countries, *B. hominis* has a higher prevalence (30-50%) in comparison with developed countries (1.5-10%). The high prevalence in developing countries is related to poor hygiene, and consumption of contaminated food or water [15-16]. *B. hominis* is accepted as agents of tourist diarrhea and the most common symptoms associated with *B. hominis* infection include diarrhoea, abdominal pain and vomiting. It causes persistent or recurrent diarrhoea in patients with AIDS and other immunodeficiencies [17].

MATERIALS AND METHODS

Prospective study was carried out in Microbiology laboratory of Career Institute of Medical Sciences and Hospital, Sitapur Hardoi Bypass Road Lucknow. Study period was 8 months from January 2016 – August 2016. A total of 640 samples were examined for the presence of intestinal parasites. None of the patients were immunocompromised.

The fecal specimens were grossly examined for stool color, consistency, mucus, blood and visible parasites. All specimens were subsequently sedimented by the formol-ether and floated by the saturated salt solution. All the specimens were subjected to microscopic examination with Lugol's and Iodine wet mount before and after concentration methods. Specimens also subjected to Modified Zeil Neelsen staining to look for coccidian parasites.

RESULTS

A total of 139 (21.7%) samples revealed presence of parasites. Out of which, 41 (29.4%) samples were found to be positive for *B. hominis* only.

Table 1: Prevalence of ***Blastocystis hominis***

No. of Samples n	Total Parasite Prevalence n (%)	*B. hominis* Prevalence n (%)
640	139(21.7%)	41(29.4)

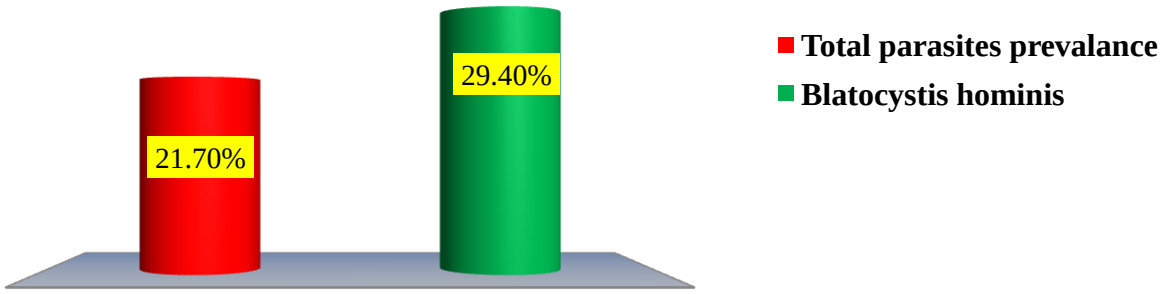

Table 2: Gender-wise prevalence of ***Blastocystis hominis***

Name of parasites	Number of parasites (%)	Male n (%)	Female n (%)
Blastocystis hominis	41 (29.4)	36(87.8)	5(12.1)

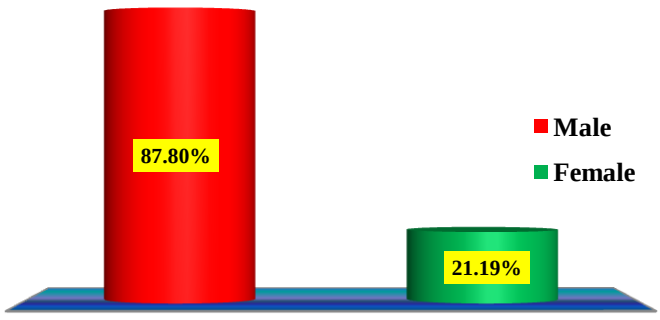

Table 3. Distribution of ***Blastocystis hominis*** in Males of different age group

PARASITE	0-6 mnth	7mnth-5yrs	6-20yrs	21-40 yrs	41-60yrs	>60 yrs
B.hominis	0	4	6	8	18	0

Among the males of different age group *Blastocystis hominis* was most frequently found in the age group of 41-60 years.

Table.4. Distribution of ***Blastocystis hominis*** in Females of different age group

PARASITE	0-6 mnth	7mnth-5yrs	6-20yrs	21-40 yrs	41-60yrs	>60 yrs
B.hominis	0	0	2	3	0	0

Table 5. Frequency of symptoms in patients with *B. hominis* detected in stool examination

Clinical Feature	Patients Number (17)	%
Abdominal pain	41	100
Diarrhoea	32	78.0
Nausea	27	65.8
Loss of weight	18	43.9
Constipation	9	21.9
Vomiting	9	21.9

In the present study out of 41 patients all the patients have abdominal pain (100%) with diarrhoea (78 %) and Nausea (65.8). Other symptoms and their frequency rates are given in table no. 5.

Table 6. Clinical response rates after treatment with metronidazole

Clinical Feature	Follow-up Patients Number	Post therapeutic Clinical response %
Nausea	27	100
Diarrhoea	32	96.5
Abdominal pain	41	92.3
Vomiting	9	92.1
Constipation	9	52
Loss of weight	18	0

A second stool specimen was obtained from all the 41 patients after metronidazole therapy. The consecutive parasitological investigation revealed no intestinal protozoa in *B. hominis* positive stool specimens. Intestinal symptoms: abdominal pain (100%) with diarrhoea (76.4%) and constipation (64.6%) improved in *B. hominis* detected patients. Clinical symptoms Nausea and Vomiting disappeared in (100%) and (92.1 %) patients respectively.

DISCUSSION

There is still much debate about the pathogenicity of *B. hominis* in humans. Though many authors have recognized it as a pathogen [18-19], however, there are still many authors who doubt the ability of *B. hominis* as a pathogen in human [20-21].

In the present study, among the 41 patients in which *B. hominis* was detected, it represented the sole causative parasitic agent. Similarly, studies done by El- Shazly *et. al.* and Selcuk KAYA *et. al.*, reported 23 and 52 symptomatic patients respectively in which *B. hominis* represented the only causative parasitic agent [22-23].

In the present study *B. hominis* was detected only in symptomatic patients. The most common symptoms were abdominal pain (100%), diarrhoea (78%), nausea (65.8 %) and vomiting (21.9%). The studies done by Dogan N and Selcuk KAYA *et. al.*,[24-23] showed similar results. Intestinal symptoms: abdominal pain (100%) with diarrhoea (78%) and constipation (21.9%) improved in *B. hominis* detected patients. Clinical symptoms Nausea and Vomiting disappeared in (100%) and

(92.1%) patients respectively. All of these symptoms improved after metronidazole therapy so we can put forward this protozoon as possible pathogenic according to the good response to metronidazole therapy in these patients.

In our study, prevalence of *B. hominis* was more in males (87.8%) as compared to that in females (12.1%). whereas a study done by Husain *et al*., showed higher rate of infection among females in comparison to males[25]. Among the males of different age groups, *B. hominis* was most frequently found in the age group of 41-60 years.

The clinical literature offers no conclusive evidence as to what constitutes effective treatment for the eradication of *B. hominis*. In the present study, 41 persons who had *B. hominis* as the only finding in their stool examination were administered metronidazole 250 to 500 mg BID for 7 days. All patients became asymptomatic and *B. hominis* was detected in none of the stool samples. Similarly, Kain *et al*. treated 18 persons with gastrointestinal symptoms along with *B. hominis* in the stool with metronidazole (250 to 750 mg TID for 5-10 days). Fourteen (78%) became asymptomatic or had an improvement in their symptoms [26]. However, other authors have had less success. Grossman found that only 13% of patients treated with metronidazole had a microbiologic cure [27]. Markell and Udkow found that metronidazole failed to eradicate *B. hominis*[28].

CONCLUSION

B. hominis parasite infection has been considered nonpathogenic as a commensal organism. However, in immunocompromised cases this parasite proved as pathogenic.

In our study out of 502 cases 17 cases were proved to be positive for *B. hominis*. These cases have various symptoms like Diarrhoea, Abdominal pain, Nausea, Vomiting, Constipation, Loss of weight.

The cases were treated with metronidazole and were found negative for *B.homins* on subsequent stool examination with improvement in symptoms.

Therefore *B. hominis* seem to be able to reveal various intestinal symptoms and considered as pathogenic organism in humans which must be treated successfully with metronidazole.

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