MORPHOLOGY AND FREQUENCY DISTRIBUTION OF PROTOZOAN BLASTOCYSTIS HOMINIS

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Abstract

Eight hundred stool specimens were examined for the presence of Blastocystis Hominis (BH) by direct microscopy in Saline and Iodine and by concentration with formal saline ether method. Four hundred specimens were positive for Cyst or Ova of various parasites, of which BH was present in 12% samples. Of the total 400 positive cases 56% were positive for Protozoa and within this group 21% were positive for BH. Morphologically these protozoa were seen as organelles 8 lOu in size with cytoplasm compressed at the periphery of the cell by a large central vacoule. Often similar organelles of size lO-60u were also seen. Fourteen cases who presented with diarrhoea and had high concentrations of this parasite were treated with Di-iodoquin or Metronidazole. The treatment lead to disappearance of parasites from faeces and cesation of diarrhoea (JPMA 38: 322, 1988).

INTRODUCTION

Blastocystis Hominis was first described and named by Brumpt in 1912'[1]. It has been classified as a cyst of a flagellate[2], a vegetable or-ganism[3] and fmally several investigators concluded that it was a yeast of genus Schizosaccharomyces[4-5]. In 1967 Zierdt et al[6] finally classified Blastocystis hominis as a protozoa. In recent years it has been established as a pathogenic parasitic protozoa causing diarrhoea[7-9]. These reports and consistent finding of Blastocystis hominis in stool specimens stimulated us to specially examine specimens for this parasite, and see its frequency among intestinal parasites and within the protozoan group. Its morphological appearance and response to therapy is also presented.

PATIENTS AND METHOD

Eight hundred stool specimens were examined for parasites during the year 1986-87. Patients were requested to bring specimens within 1½ hours of defecation or pass the sample at the laboratory. All specimens brought after 2 hours were not accepted for examination. At presentations specimens were examined immediately in Saline and Iodine preparations and concentration method was performed within 1 hour. Concentration method was performed by suspending 5-10 gram (one teaspoonful) of faeces in 15 ml of saline. This suspension was filtered through wet fine mesh muslin cloth; double folded (surgical bandage) to remove gross food and debris. The filterate was centrifuged in a swing out centrifuge at 1000 rpm for 2 minutes. The supernatant was discarded and the pellet examined in saline for Trophozoites of protozoa and flagellates. This pellet was then suspended in 13 ml of 10% formal saline solution and left to stand for 10 minutes. Two ml of ether was added to this suspension, mixed vigorously for 10 seconds and centrifuged at 1000 rpm for 2 minutes. The cyst and ova concentrate in the sediment and debris layers over the ether layer. This layer is carefully ringed by a stick and the supernatant decanted carefully. The sediment is examined for Ova and Cysts in Iodine and then permanently preserved in 1 ml of 10 % formal saline in sealed bottles. Black and white photomicrographs of this material were taken using a Olympus photomicrography set up. Fourteen patients who had high concentrations of BH were treated with Metronidazole 400 mg 8 hourly for 5 days or Di-iodoquin 300 mg three times a day for 10 days.

RESULTS

Of 800 stool specimens examined 400 (50%) were found positive for parasites. The frequency of Blastocystis hominis as compared to other parasites is given Table 1.

TABLE – I. Frequency of Blastocystis Hominis among Intestinal Parasites.

Parasite	Number	Frequency
Ascaris	36	09%
Tricurus Tricura	20	05%
H. Nana	16	04%
A. Duodenale	08	02%
Enterobius Vermicuralis	02	0.5%
Taenia	01	0.25%
Giardia Lamblia	96	24.0%
E. Histolytica	144	36.0%
E. Coli	14	3.5%
Endolimax Nana	08	02%
I. Butschlii	07	1.75%
Blastocystis Hominis	48	12%
	400	100

The frequency of Blastocystis hominis among intestinal protozoa is given in Table II.

TABLE – II. Frequency of Blastocystis Hominis among Intestinal Protozoa 221 Positives.

Protozoa	Frequency
E. Histolytica	65.2%
E. Coli	6.5 %
Endolimax Nana	3.6%
I. Butschlii	3.3%
Blastocystis Hominis	21.4%

The frequency of mixed positivity of BH with other parasites is given in Table III.

TABLE – III. Blastocystis Hominis and mixed Positivity with other Parasites 48 Positives.

B.H. Alone	Frequency
B.H. + E. Histolytica	62.5%
B.H. + E.H. + Ascaris	25.0%
B.H. + E.H. + Giardia	6.25%
	6.25 %

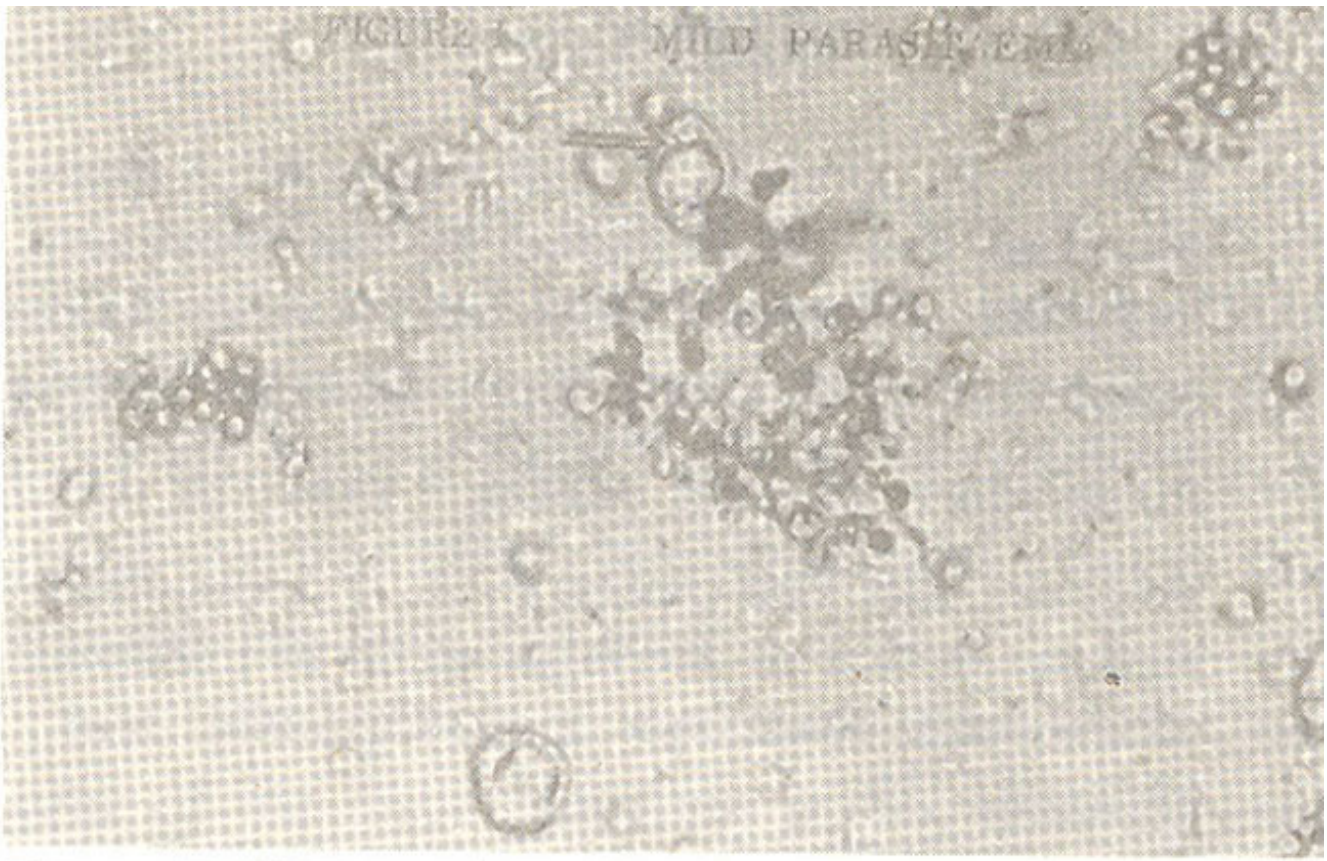

Figure1.Mild Parasitaemia Arrow → shows refractile granuoles in the cytoplasm with large central vacuole.

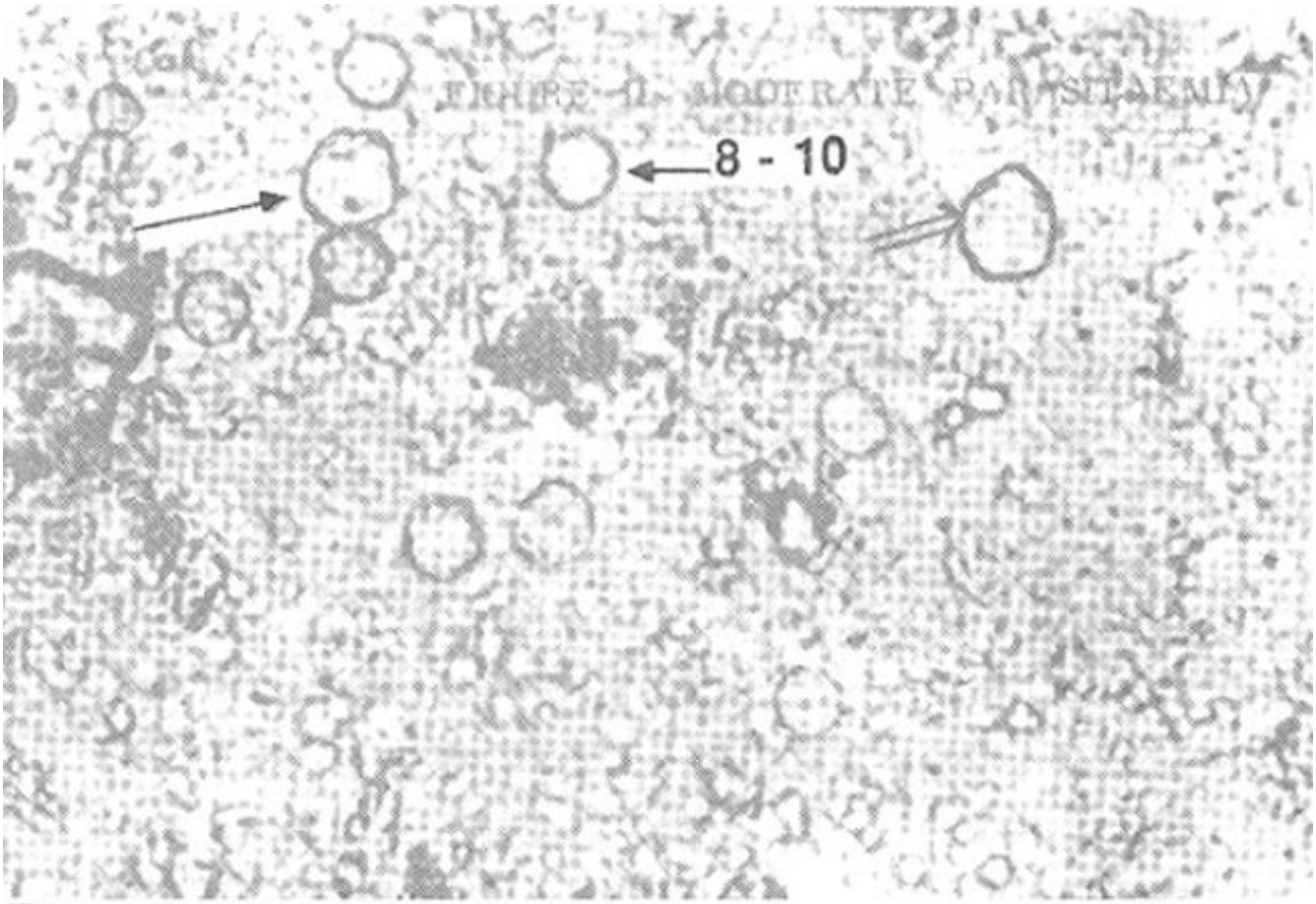

Figure 2. Moderate Parasitaemia → 8-10 shows small size of BH and other arrows show 10-60u size.

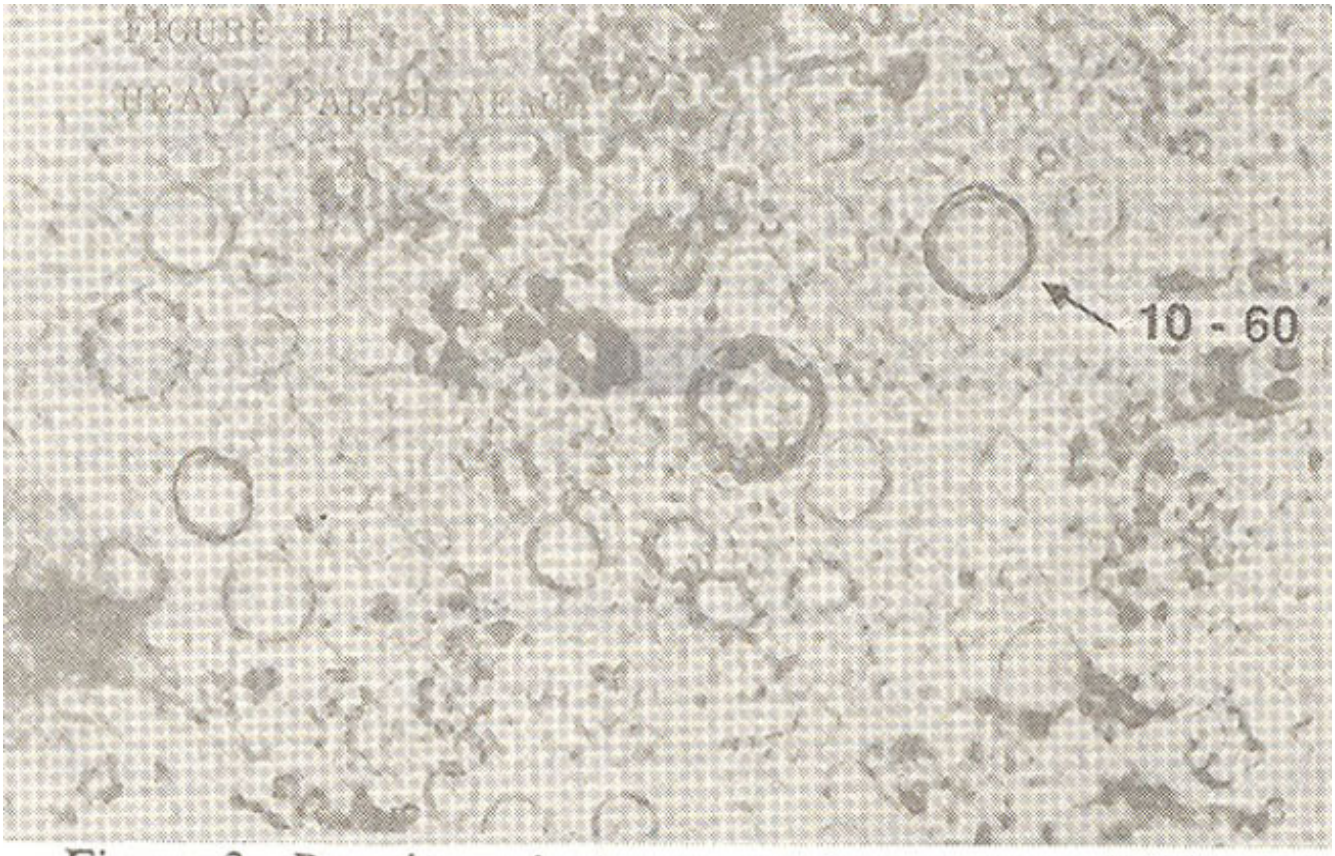

Figure 3. Parasitaemia Arrow → 10-60 shows the large size of BH 10-60u.

Figures 1,2 and 3 at 400 magnification show mild, moderate and heavy parasitaemia of BH. Figure 2 and 3 show the two sizes of the organism 8-10 and l0-60u. In some cases BH were seen dividing by Binary fission, and in some cases sluggishly motile amoeboid forms were seen forming small pseudopods. Fourteen cases who had heavy parasitaemia and diarrhoea were treated and with treatment BH disappeared from stool and diarrhoea ceased.

DISCUSSION

Blastocystis Hominis was found in 12% of the patients positive for intestinal parasites, its frequency less only to Giardia Lamblia 24% and E. histolytica 36%. In two similar studies one from Nepal[10] and the other from U.S.A[11] the frequencies of Blastocystis hominis were 10% and 60% respectively. Our results are similar to Nepalese data, however in our study majority (65%) had Blastocytis as the lone parasite. Blastocystis hominis though constitutes a large proportion of the protozoan group (2 1.4%) it has been reported to be pathogenic when found in faeces in high concentrations. [8] In our cases the positivity of Blastocystis hominis was reported as mild, moderate and heavy. Those cases who had diarrhoea and high concentrations were treated with metrorildazole or di-iodoquin with excellent results.

We suggest that all laboratories should report this organism in absence as well as presence of other parasites and inform the physician of its concentration in stool. Likewise when reported in high concentration the physician should treat this protozoa with the recommended doses.

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