

Research Article

EVALUATION OF PARASITE CAUSING GIT (GASTRO-INTESTINAL TRACT) INFESTATIONS IN HIV/AIDS PATIENTS

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ABSTRACT

Intestinal parasitic infection in patients with HIV/AIDS are leading cause of morbidity and mortality particularly in developing countries with diarrhea as chief complain so present study was undertaken to assess prevalence of intestinal infection caused by enteric parasites in HIV/AIDS patients. A prospective study conducted on 100 HIV positive and HIV negative patients from August 2008- July 2009. Parasitic infections were diagnosed by examination of stool sample which were examined as fresh wet mount, formal ether concentration technique and modified acid fast stain. The overall prevalence of enteric parasite in study group was 31% in HIV positive patients and 15% in HIV negative patients. The most common parasite was *Cryptosporidium parvum* followed by *Entamoeba histolytica* and *Giardia Lamblia*. The present study highlights the importance of testing for intestinal parasites in patients with HIV positive patients emphasizing the necessity of increasing awareness among clinicians regarding the occurrence of these parasites in this population and to help in instituting appropriate therapy.

Key Words: *Diarrhea, Prevalence, Enteric Parasites*

INTRODUCTION

HIV/AIDS (human immunodeficiency virus/acquired immunodeficiency syndrome) is major problem in India with more than 6 million recorded cases by the end of 2005. Gupta *et al* {2008}, WHO {2006} AIDS represents the most severe sequel of immunosuppression leading to development of severe opportunistic infection and otherwise rare tumours. Among opportunistic infections, diarrhea is significant cause of morbidity observed in majority of studies. Uppal *et al* {2008}

Reports indicate that diarrhoea occurs in 30-60% of patients with AIDS in developed countries and in about 90% of such patients are in developing countries. The infectious agents include both opportunistic agents and non opportunistic agents. The opportunistic agents causes severe, chronic or frequent gastrointestinal diseases and non opportunistic agents that usually causes acute, treatable diarrhoeal illness . Gupta *et al* {2008}, Uppal *et al* {2008}, Joshi *et al* {2000}

Chronic diarrhoea, defined as persistent of diarrhea beyond four weeks is a common symptoms in HIV infected patients in the developing counties like India and often leads to weight loss and wasting syndrome. The world health organization (WHO) defines diarrhoea wasting syndrome along with a positive HIV serology test to be an AIDS defining illness . WHO {2006}, Joshi *et al* {2000}, Mukhopadhyay *et al* {1999}

Several species of protozoa have been associated with acute and chronic diarrhea in HIV patients. The most opportunistic parasite reported included *Cryptosporidium parvum*, *Isospora belli*, *Cyclospora cayetanensis* and *Microspora spp* and that of non opportunistic parasites such as *Entamoeba histolytica*, *Giardia lamblia*, Hookworm, *Ascaris lumbricoides*. Besides these the nematode *Strongyloides stercoralis* can cause diarrhea and overwhelming infestations (hyperinfection syndrome) in patients with such immunosuppressive disorders. Gupta *et al* {2008}, WHO {2006}, Joshi *et al* {2000}

Only a few studies regarding the prevalence of intestinal parasite and their association with diarrhoea of HIV infected patients are available from central India at present. So the present was undertaken to find

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out prevalence of intestinal parasites causing GIT (Gastro-intestinal tract) infestations in HIV/AIDS patients at a tertiary care institute located in central India.

MATERIAL AND METHODS

Study design and patient selection

A present study was conducted from August 2009 to July 2010 on HIV infected and HIV non infected patients at Department of Microbiology,

During this period a total 100 HIV infected patients were examined for presence of intestinal parasites. Stool sample from 100 HIV negative patients having complains of diarrhea were also enrolled for study as control group.

All the tests were done after due patients consents and in accordance with the institutional ethical guidelines.

HIV positive patients were defined as those who had tested positive for HIV antibody by two sequential ELISA/Rapid tests as per recommended given by WHO{2006}.

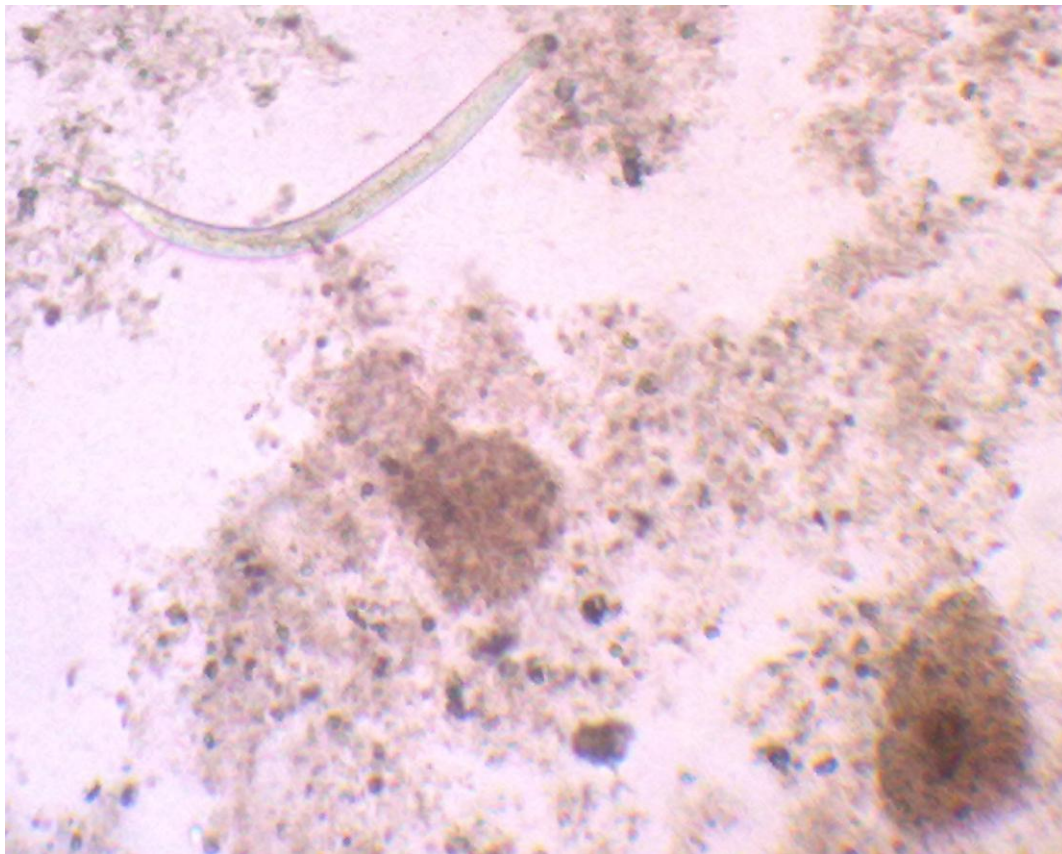


Figure 1. Larvae of *Strongyloides stercoralis* on wet mount

All the patients were advised to give at least 2 consecutive stool specimen and stool were collected in sterile plastic containers and were immediately sent to Department of Microbiology for further parasitic evaluation.

Stool examination

Parasitic infection were diagnosed by examination of stool specimen as fresh wet mount, former ether concentration technique and modified acid fast stain.

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Fresh and concentrated stool specimen were examined as saline wet mount to detect motile trophozoites and iodine wet mount to detect ova, larvae and cysts. **Figure 1 and 2** shows larvae of *strongyloides stercoralis* and egg of *hymenolepsis nana*. Air dried smears from fresh samples were fixed and stained by a modified acid fast to detect the coocidian parasite. **Figure 3 @ 4** shows oocyst of *cryptosporidium parvum* and oocyst of *isopora belli* respectively on modified Z/N stain.



Figure 2. Egg of *Hymenolepsis nana*

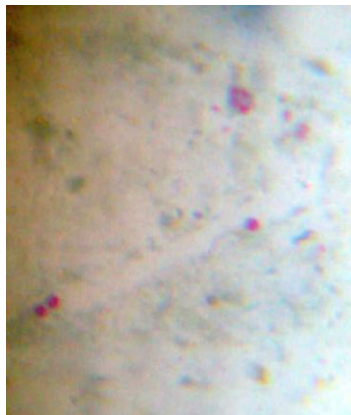


Figure 3. Oocyst of *Cryptosporidium parvum* on modified Z/N stain

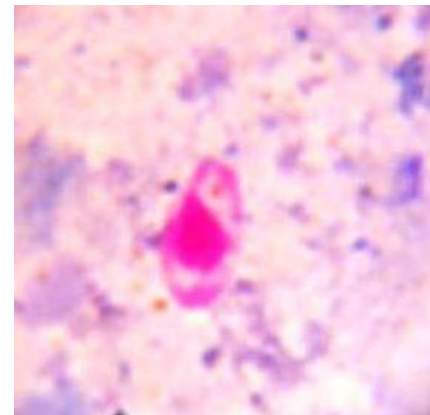


Figure. 4. oocyst of *Isospora belli* on modified Z/N stain

Observations

A total 100 HIV positive patients were evaluated from August 2009 to July 2010 for intestinal parasites, while 100 HIV negative patients complaining of diarrhoea were taken as control group were also tested during this period.

The age group from 100 HIV patients were in range of 10-60 years with maximum cases were found in age group of 31-40yrs accounting for 52 cases, followed by 27 cases aged in 21-30yrs, 16 cases aged in 41-50yrs and 1 case each in 10-20 yrs and >50 yrs respectively.

Of total 100 HIV positive patients studied, 31 patients shows parasite in stool examination while only 15 cases of 100 HIV negative showed parasites in stool sample. **Table 1**

A total 41 parasite were found in HIV positive patients among 31 cases, 8 cases showed one or more parasite in stool sample with *Cryptosporidium parvum* and *Entamoeba histolytica* for 5 cases and 3 cases for *Cryptosporidium parvum* and *Giardia.Lamblia* respectively.

Table 1: Prevalence of enteric pathogen

Sr.no		HIV positive(n=100)	HIV negative(n=100)
1.	Intestinal parasites	31%	15%
2	Coccidian parasites	18%	0%

Among this 41 parasites, there was preponderance of *cryptosporidium parvum* 15(36.58%), followed by *Entamoeba histolytica* 10 (24.39%), *Giardia Lamblia* 8 (19.51%), *Isospora belli* 3(7.31%), *Strongyloides stercoralis* 3(7.31%) and 1(2.43%) each of Hook worm and *Hymenolepsis nana* respectively (Table 2).

While among 15 positive stool samples for parasite of HIV negative patients *Entamoeba histolytica* 8 was the common parasite followed by 4 for *Giardia Lamblia*, 2 for Hookworm and 1 for Ascarsis. No coccidian parasites were detected from patients with HIV negative status. **Table 2**

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Table 2: Distribution of enteric parasites

Sr. No.	Parasites	HIV positive(n=41)	HIV negative(n=15)
1	<i>Cryptosporidium parvum</i>	15	0
2	<i>Entamoeba histolytica</i>	10	8
3	<i>Giardia lamblia</i>	8	4
4	<i>Isospora belli</i>	3	0
5	<i>Strongyloides stercoralis</i>	3	0
6	<i>Hookworm</i>	1	2
7	<i>Ascaris lumbricoides</i>	0	1
8	<i>Hymenolepis nana</i>	1	0

The CD4+ T cell count was done in only 35 HIV seropositive patients due to financial constraints and due to lack of the patients' compliance. Out of these 35 patients, 18 patients had intestinal coccidian parasitic infection. The CD4+T cell count was 500 to 200 cells/mm³ in three patients (16.6%), 200 to 100 cells/mm³ in seven (38.8%) patients, 100 to 50 cells/mm³ in four (22.2%) patients and <50 cells/mm³ in two (11.1%) patients with intestinal coccidian parasitic infection respectively.. Two patients having cryptosporidium infection had a normal CD4+T cell count (616 and 589 cells/mm³) respectively

DISCUSSION

The present study documents the prevalence of enteric parasites in HIV positive and HIV negative patients complaining of diarrhea in central part of India.

The overall prevalence of intestinal parasites in our study is found to be 31% and 15% in HIV positive and HIV negative patients respectively. Our study correlates well with study carried out by Gupta *et al*{2008} in their study prevalence was found to be 28.13% in HIV positive patients and 13.27% in HIV negative patients. Similar findings were also seen in other studies carried out by Kumar *et al*{2002}.

In a country of 4.2million HIV positive adult in age group of 15-49% years age group our study also had maximum cases in age group of 31-40 yrs and 20-30yrs age group respectively. Gangandeep K{2000}

The predominant parasite in our study was *cryptosporidium parvum* 15% followed by *Entamoeba histolytica* 10% similar finding was shown by study carried out by S.Satheesh Kumar *et al* {2002} in their study 14 % cases of *cryptosporidium parvum* and 12% cases of *Entameoba histolytica* was found respectively.

The prevalence of coccidian parasite in present study is 18% in HIV positive and no single coccidian parasite found in HIV negative patients similar finding was found in other studies carried out in southern India. Seghal *et al* {1999}, Jorge *et al* {2003}

So in conclusion diarrhoea in patients with HIV/AIDS is the leading cause of morbidity and mortality in developing countries like of ours India. Studies from various parts of world show contrasting prevalence rate with marked variation from place to place and geographical variation and hence identification of etiological agents of diarrhoea in a patients with AIDS is very important as it can help in the institution for appropriate therapy and reduction of morbidity and mortality in such patients. Hence, routine screening of the stool samples of HIV seropositive patients with diarrhoea should be done for prompt patient care, to prevent the fulminant form of the disease. As most of the opportunistic parasitic infections occur through the faecal oral route, they can be prevented by using safe drinking water and food, by maintaining personal hygiene and by avoiding walking bare foot.

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