

ORIGINAL ARTICLE

ENTERIC OPPORTUNISTIC PARASITIC INFECTIONS IN HIV SEROPOSITIVE PATIENTS AT TERTIARY CARE TEACHING HOSPITAL**Sangeeta D Patel¹, Tanuja B Javadekar², Dipa M Kinariwala³****Author's Affiliations:** ¹Assistant Professor, Dept of Microbiology, GMERS Medical College, Gandhinagar; ²Professor & Head, Dept of Microbiology, Government Medical College, Baroda; ³Assistant Professor, Dept of Microbiology, B.J. Medical College, Ahmedabad, Gujarat, India**Correspondence:** Dr.Sangeeta D. Patel, Email: sanginfriend@yahoo.co.in**ABSTRACT****Background:** Enteric opportunistic parasitic infections are the major source of diarrheal disease in developing countries mainly in Human Immunodeficiency virus (HIV) infected patients.**Objective:** The study was to detect enteric parasites causing diarrhea and their association with immune status in HIV-seropositive patients.**Methods:** The present study was conducted in tertiary care teaching Hospital, Baroda between January 2006 to January 2007 involving 100 Human Immunodeficiency virus (HIV) seropositive patients. From all patients stool samples collected and stool was examined for enteric parasites by microscopy with special staining methods.**Results:** A total of 100 HIV sero-positive patients with and without diarrhea were included in the study. Of the 100 patients, the protozoan parasitic infection was found in 28% (28/100). Out of 100 patients, 50 had diarrhea in which parasitic infection was 24 (48%) and 4 (4/50) protozoal parasites positive cases did not have diarrhea. A significant difference ($p < 0.05$) was observed in the level of infection of intestinal protozoan between the HIV seropositive with diarrhea and HIV-seropositive without diarrhea.**Conclusion:** Enteric opportunistic parasitic infections were detected in 28% among HIV-seropositive patients. Early detection of enteric parasitic infections will help in the management and to improve the quality of life for HIV-infected individuals.**Key words:** Cryptosporidium, Diarrhea, HIV, Opportunistic parasites, isospora, enteric parasite**INTRODUCTION**

Enteric opportunistic parasitic infections are major source of diarrheal disease in developing countries mainly in HIV infected patients. The progressive decline and ultimate destruction of immune system functions, which are characteristic for AIDS, usually result in morbidity and ultimately death due to opportunistic bacterial, viral, fungi and parasitic infections.¹ Gastrointestinal infections are very common

in patients with HIV infection or AIDS.² Diarrhea is a common clinical presentation of these infections. Reports indicate that diarrhea occurs in 30-60 % of AIDS patients in developed countries and in about 90 per cent of AIDS patients in developing countries.³ The presence of opportunistic parasites *Cryptosporidium parvum*, *Isospora belli* and *Microsporidia* are documented in patients with AIDS.^{4,5} Non opportunistic parasites such as *Entamoeba histolytica*, *Giardia lamblia*, *Trichuris trichiura*, *Ascaris lumbricoides*, *Strongy-*

loides stercoralis and *Ancylostoma duodenale* are frequently encountered in developing countries but are not currently considered opportunistic in AIDS patients. The incidence and prevalence of infection with a particular enteric parasite in HIV/AIDS patients is likely to depend upon the endemicity of that particular parasite in the community.^{6,7,8} The current study was conducted to determine the prevalence of enteric opportunistic parasitic infections among HIV-seropositive patients with and without diarrhea.

MATERIAL AND METHODS

The study was carried out in tertiary care teaching hospital, Microbiology laboratory, from January 2006 to January 2007.

A total of 100 HIV seropositive patients from skin, medicine and Integrated counseling and testing center (ICTC) attached with microbiology department were included in this study. 100 patients with and without diarrhea participated in the study after giving consent and provided two consecutive stool samples. Before collecting the samples, patient information such as name, age, sex, occupation, clinical history as well as history of diarrhea, antibiotic and antiparasitic treatment history was obtained. Patients already on antiparasitic and antibiotic treatment were excluded from the study.

Stool samples were collected in clean wide mouthed, leak proof plastic containers from each patient. Stool samples were processed for the investigation of parasitic pathogens. Parasite detection was done as per the standard protocol. Direct wet mount preparation

(saline and iodine) and wet preparation from formal ether concentrated samples were used for the detection of protozoan trophozoites, cysts and helminthic eggs and larva. For the detection of coccidian parasites, smears of stool samples were prepared and stained with modified acid fast method.⁹

Statistical analysis was done using SPSS software and P value <0.05 was considered significant.

RESULTS

Out of the total 100 patients in the study, majority were males (75%, 75/100). Remaining 25% (25/100) were females. In the present study, the preponderant age group affected from HIV was 20–29 years (61%, 61/100). Heterosexual contact (94%, 94/100) was the leading cause of HIV transmission. The 100 HIV sero-positive patients with and without diarrhea included in the study were aged between 20 to 55 years. Of the 100 patients, the protozoan parasitic infection was found 28% (28/100). Of these 100 patients, 50 had diarrhea in which parasitic infection were 24 (24/50, 48%) as shown in table 1. There were 4 (4/50, 8%) protozoal parasites positive of cases without diarrhea. A significant difference ($p < 0.05$) was observed in the level of infection of intestinal protozoans between the HIV seropositive with diarrhea and HIV-seropositive without diarrhea. Although *Giardia lamblia* (2) and *Entamoeba histolytica* (2) are not considered as opportunistic pathogen it was included in the study because of increased prevalence of these parasites in developing countries

Table 1: Distribution of parasitic infection among HIV sero-positive patients

Parasitic Species	Diarrhea Cases (n= 50)	Cases without diarrhea (n= 50)	Total cases (n= 100)
Cryptosporidium Parvum	18(36)	2(4)	20(20)
Isospora Belli	2(4)	1(2)	3(3)
Giardia Lamblia	2(4)	0	2(2)
Entamoeba Histolytica	2(4)	0	2(2)
Iodoamoeba Butschii	0	1(2)	1(1)
Total	24(48)	4(8)	28(28)

Figure in parenthesis indicate percentage

DISCUSSION

Opportunistic intestinal parasitic infections are the major cause of morbidity and mortality in PLHA worldwide. Therefore early and accurate detection of

these parasites is extremely important for implementing timely and most appropriate therapy.¹⁰

In the present study, out of 100 patients, majority were in the reproductive age group, i.e. 20–29 years (61%, 61/100), with a male preponderance

(75%,75/100). Rangnathan and his colleagues reported 77.4% male patients with 81% patients in the age group of 21–40 years in their study done at South India.¹¹

In the present study the enteric parasites were detected in 28% from the samples with diarrhea and without diarrhea patients. There was significant difference the infection of opportunistic parasites among HIV- seropositive cases with diarrhea 48% (24/50) and without diarrhea 8% (4/50). here are number of studies reported from Indian and other countries with the high prevalence of intestinal parasites 25 to 50 % which are near to our findings.¹² Among these parasitic infections *Cryptosporidium. parvum* (71.4%, 20/28) was the commonest parasite found, followed by *Isospora belli* (10.7%, 3/28). *Cryptosporidium. parvum* was reported as the most common enteric parasite by Aruna Aggarwal (51.42%)¹³, *I. belli* was found as the commonest parasite by Gupta at Jamnagar (17.24%) and Kumar at Chennai (18%).^{14,15} Differences in the incidence of intestinal parasitic infections can be attributed to the differences in geographical distribution of parasites, sanitary practices and different selection of cases. Coccidian parasites usually cause a self-limiting illness in immunocompetent individuals but as the immune status of the patients' falls they are known to cause life-threatening profuse watery diarrhoea.¹⁰

Other non-opportunistic parasites detected in this study were *E. histolytica* (7.1%,2/28), *Giardia lamblia* (7.1%, 2/28), *Iodoamoeba butschii*(3.6%/28). The reported prevalence of non-opportunistic parasites varied from 5-30 percent in HIV-positive patients.¹⁴ In the present study non-opportunistic parasites were detected in 17.85% HIV positive patients ,thus highlighting the need for early detection and treatment of such infections to reduce the morbidity in HIV-positive patients with diarrhea.¹⁶

Modified acid fast staining is a simple technique which can be used to screen stool samples of all HIV positive patients with diarrhoea even in resource limited settings. An early diagnosis and treatment would greatly help in improving the quality of life and prevent further deterioration of the immune system. All chronic diarrhoea cases need to be investigated for coccidian infections and screened for HIV infection de novo as majority of the coccidian parasites are associated with chronic diarrhoea with diarrhoea being the presenting symptom of HIV in many cases. Adequate precautions while handling

pets and animals and access to clean, hygienic toilets can reduce the risk of acquiring enteric parasitic infections in HIV positive patients.¹⁷

CONCLUSION

The study indicated that enteric parasitic infection caused diarrhea (28%) of the HIV-seropositive patients. The majority of the infections in the patients were due to enteric opportunistic parasitic infections. The current finding also highlights the importance of early detection of opportunistic parasitic infections among HIV-seropositive patients. This may help to improve the management and quality of life of HIV-infected individuals.

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