

**Prevalence of Intestinal Parasitic Infections in HIV-Positive Patients in Sanandaj, Iran in the years 2007-2008**Homeira Ghobadi\*<sup>1</sup>, Ghobad Moradi<sup>1</sup>, Fatemeh Mirhadi<sup>2</sup>, Fardin Gharibi<sup>1</sup>, Alireza Gharib<sup>1</sup><sup>1</sup>Deputy of Research and Technology, Kurdistan University of Medical Sciences, Sanandaj, Iran<sup>2</sup>Department of Medical Parasitology & Mycology School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.\*Corresponding Author: [homeira.ghobadi@gmail.com](mailto:homeira.ghobadi@gmail.com)

**Abstract:** The importance of intestinal parasitic infections has increased with the HIV/AIDS pandemic. There are no more reports on the prevalence of intestinal parasitic infection in HIV positive patients in Iran. A study of stool samples from 74 HIV-infected patients, who visited Behavioral Disease Consultation Clinic, Sanandaj, Iran, was performed to assess the prevalence of parasitic infections and CD4 cell count. The total prevalence of parasites was 25.7%. The following parasites were identified: *Blastosystis hominis*(6.8%), *Entamoeba coli*(6.8%), *Giardia lamblia*(1.4%), *Cryptosporidium parvum*(8%) *Cyclospora cayetanensis*(2.7%). Intestinal parasites such as *Cryptosporidium parvum* and *Cyclospora cayetanensis* were significantly more frequent in the low immunity group with diarrhea. No association was observed between CD4 cell count and manifestation of any particular parasites.

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**Key words:** Intestinal parasites, HIV positive patient, Iran.

**Introduction**

with the emergence of the Human Immunodeficiency Virus (HIV), increased prevalence of number of parasitic, viral and bacterial diseases (1), Intestinal parasites are the major health problems among HIV seropositive people due to the defects in the immune system (2). The association between many types of parasites such as helminthes and protozoan intestinal with HIV positive patients is well documented(3). This type of infection creates symptoms in the gastrointestinal tract, like diarrhea that according to the demographic factors, can be sever for these patients (4). Thus parasitic infections are important factors in the morbidity and mortality of AIDS that reaches to 50% in developing countries (5). According to the 2009 UNAIDS/WHO AIDS epidemic update in 2008, 33.4 million people (range 31.1-35.8 million) were living with HIV, some 2.7 million people became newly infected that year, and 2 million died because of AIDS(6). At the end of 2008, had been reported, there are 19435 seropositive cases in Iran, that 377 cases live in Kurdistan province (7).

**Materials and Methods**

Over a 4 –month's period, 74 HIV positive patients were referred to the Center for Behavioral Disease Control and Prevention in Sanandaj city. Total of 74 patients provided stool specimens on three day-periods and 58 of them participated in CD4 cell count. From each specimen three layers were provided by Formalin-ethyl acetate concentration method. First sample was examined according to

formalin-ethyl acetate concentration method for detecting ova and cysts(8). The second sample was stained according to Modified Trichrome-Blue for detection of Microsporidia(9,10) and the third sample was stained according to Modified Zihel-Nelson technique for detection of Coccidia (11).

**Results**

From the 74 HIV-infected patients in this survey, 67(90.5%) were males and 7(9.5%) were females. The age range was 5-50 years (mean=36 years) and the risk factors for acquisition of HIV infected included 86.4% (64 of 74) with a history of intravenous drug use, after that 10.8% (8 of 74) with heterosexual behavior. The most frequently found parasite was *Cryptosporidium parvum*(8%), followed by *E.colli*(6.8%), *Blastocystis hominis* (6.8%), *Cyclospora cayetanensis*(2.7%), *Giardia lamblia* (1.4%).

The mean CD4 cell count of 58 individuals was 669.34 cells /mm<sup>3</sup> (rang = 167-1577) and from 74 patients 9 (12.2%) patients had diarrhea(Diarrhea was defined as the liquid stool daily for 3 days).

Overall prevalence of intestinal parasites among the study population was 25.7% who were *all monoparasitized*.

CD4 cell count was not significantly different in subjects with and without diarrhea. Diarrhea was present significantly among the patients with opportunistic agents, such as *Cryptosporidium parvum* and *Cyclospora cayetanensis*. Intestinal parasites detected in this survey shown in Table1.

Table 1. Intestinal parasites detected in HIV-positive individuals and their correlation with diarrhea

Detected	No.	Diarrhea
<i>Cryptosporidium parvum</i>	6(8%)	3(50%)
<i>Entamoeba Coli</i>	5(6.8%)	0
<i>Blastocystis hominis</i>	5(6.8%)	1(20%)
<i>Cyclospora cayetanensis</i>	2(2.7%)	1(20%)
<i>Giardia lambellia</i>	1(1.4%)	0

### Discussion

Prevalence of intestinal parasite in our study is higher than another study reported in *HIV* patients in Iran (12) and it can warn which is increasing superimposed infection due to the defect of immunity. The study results highlight *opportunistic parasites* are more common and more pathogen than amoeba and flagellates parasites in AIDS patients; it seems that AIDS patients are particularly vulnerable to parasitic intracellular infection particularly with *Coccidian* (3, 13). Some studies show high prevalence of *opportunistic parasites* such as *Coccidia* and *Microsporidia* (14-16) and like our study there are reports found low prevalence of these parasites(17-19), which it depend on differences in geographical distribution (18, 20,21) and the techniques used(14). one study in Zimbabwe published by Gumbo, who found *Microsporidia* in 18% using modified *Chromotrope* staining, and 51% using *PCR* technique (14). High prevalence rates of *Cryptosporidium parvum* up to 35% or higher has been reported in studies carried out in other regions that most patients experienced sever watery diarrhea (18,22). In the present study *Cryptosporidium* oocytes were found in 8% of the patients, this report not far from the expected, because the patients were not selected on the basis of gastrointestinal symptoms. On the other hand, as several other reports suggest, there is a direct relation between diarrhea and prevalence of opportunistic parasites (17, 23).

### Conclusion

In this cross-sectional study of 74 HIV-infected individuals in Sanandaj, the overall prevalence of intestinal parasites was 25.7%, and that of Opportunistic protozoa was 9.7%. The results of our study should therefore prompt physicians caring for HIV- infected patients in Iran to request stool examination and specific tests for *Microsporidia* and *Coccidia* especially in patients with low CD4 cell count and diarrhea. Another important issue to be addressed is resurgence of other infectious conditions due to AIDS which should be kept in mind (24).

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