

Opportunistic Gastrointestinal Parasites in HIV Positive Patients in Rajkot



Medical Science

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ABSTRACT

This study is undertaken to determine prevalence rate of gastrointestinal parasites among Human Immunodeficiency Virus (HIV) positive cases. Stool sample from 100 HIV positive cases were collected. Stool samples was examined by wet saline and iodine preparations, Modified acid fast staining for observation of different gastrointestinal parasites. Out of 100 samples prevalence of prevalence of cryptosporidia was 12%, giardia was 3%, cyclospora was 2% and isospora was 5%. Multiple parasitic infection was seen in two patients. One patient was having cryptosporidia and cyclospora infection and another patient was having cyclospora and isospora infection. This study suggests infection of gastrointestinal tract with various parasites is highly prevalent among HIV positive person.

INTRODUCTION

Acquired Immuno Deficiency Syndrome (AIDS) caused by the Human Immuno deficiency Virus (HIV) is posing a challenge to all the medical professionals globally. In this era of advanced technology, we have not been able to find a cure nor a vaccine for AIDS despite the efforts of the last twenty years.¹ The HIV breaks down the immune system leaving it vulnerable to many life threatening infections and malignancies.

Parasitic diarrhoeas are an important cause of morbidity in developing countries, some of the parasites are well established enteric pathogens e.g. *Entamoeba histolytica*, *Giardia lamblia* and *Balantidium coli* etc. and others are opportunistic pathogens e.g. *Cryptosporidium*, *Isospora*, *Cyclospora* and *Microsporidium*, etc. Only a small percent of individuals harboring the established enteric pathogenic parasites suffer from symptomatic disease in an immunocompetent host. However with advent of HIV/AIDS rate of infection with a particular enteric parasite will depend upon the endemicity of the particular parasite in the community.

The progressive destruction of the immune system by chronic HIV infection leading to progressive fall in level of CD4 cells (<200 to <50) is responsible for the occurrence of infections by opportunistic microorganisms. Chronic parasitic gastrointestinal infections mainly diarrheas have been reported in developing countries. Protozoa are the most common cause particularly in developing countries.

Common enteric opportunistic parasites associated with HIV/AIDS include ³⁻⁶ *Cryptosporidium* spp., *Isospora belli*, *Cyclospora* spp., *Microsporidium* spp, *Strongyloides stercoralis*, *Giardia lamblia*, *Entamoeba histolytica*.

Diagnosis and surveillance of these opportunistic infections in AIDS will lead to early, accurate treatment and better management of these cases. Most of the opportunistic infections can be effectively treated. Prophylaxis against some of these infections will prolong and improve the life of an HIV infected individual. So an early and accurate diagnosis of the aetiological agent is important.¹⁰

Many species of *Cryptosporidium* that infect humans are exist, occurs mainly through fecal-oral transmission.^{5,6} Infection results in wide range of manifestations, from asymptomatic to severe, life-threatening illness. Watery diarrhea is the most frequent symptom.

Cyclospora is a unicellular coccidian parasite. Symptomatic infections typically manifest as watery diarrhea after incubation period of 1 week, which can be severe. Untreated infections typically last for 10-12 weeks and may follow a relapsing course.

Microsporidia are small, unicellular, obligate intracellular parasites that reside in the cytoplasm of enteric cells. The clinical manifestations are very diverse, with diarrhea being the most common.

The coccidian parasite, *Isospora belli*, infects the epithelial cells of the small intestine, causes acute, non bloody diarrhea with crampy abdominal pain, can last for weeks and result in malabsorption and weight loss.

Giardia intestinalis, a protozoan flagellate, Acute giardiasis include diarrhea, abdominal pain, bloating, nausea, and vomiting. In chronic giardiasis is recurrent and cause malabsorption.

Entamoeba histolytica is a pathogenic ameba, associated with intestinal and extraintestinal infections.

Infection with nematode *Strongyloides stercoralis* is frequently asymptomatic. Disseminated strongyloidiasis occurs in immunosuppressed patients, can present with abdominal pain, distension, shock, pulmonary and neurologic complications and septicemia, and is potentially fatal.

MATERIAL & METHODS

This study is undertaken to determine gastrointestinal parasitic opportunistic infections among Human Immunodeficiency Virus (HIV) positive cases. Samples from 100 HIV positive cases were collected from January 2005 to June 2006.

Stool samples were collected in sterile wide mouth screw cap container. Colour, Consistency (formed, semi-formed, liquid), Presence of blood, mucus and / or pus, Presence of segments and /or worms are noted during examination of faecal specimen.

Stool was examined with low power and high power in wet slide preparations of Saline to demonstrate worm eggs, larvae, protozoal trophozoites, RBCs, WBCs and Iodine to stain glycogen and the nuclei of cysts. Stool was also examined under high power and oil immersion lens after Modified acid fast staining for pink to deep red oocysts of *Cryptosporidium* (round, 4-6 µm in diameter having a granular appearance), *Cyclospora* (partially acid fast, round, 8-16 µm in diameter), *Isospora* (elliptical

cal, 16-33 x 10-19 µm in size) against a blue background. Field's stain to demonstrate trophozoites of giardia examined under oil immersion lens.

If the number of cysts, eggs or larva is low in faeces, direct examination may not reveal them. Hence, the faeces is concentrated. Stool was concentrated when there was negative result on direct examination. It was concentrated by formal ether concentration technique.

OBSERVATION & RESULTS

A total of 100 samples of stool from HIV positive patients were examined for opportunistic gastrointestinal parasitic infection.

Samples were classified according to detection of various opportunistic parasites among male and female HIV positive patients.

Table: Gastrointestinal Parasite isolated in HIV positive patients

Parasite	Male		Female		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Cryptosporidium	10	14.71 %	02	06.25 %	12	12 %
Giardia	03	04.41 %	00	00.00 %	03	03 %
Cyclospora	02	02.94 %	00	00.00 %	02	02 %
Isospora	02	02.94 %	03	09.38 %	05	05 %
TOTAL	17	25 %	05	15.63 %	22	22 %

Percentage of detection of opportunistic gastrointestinal parasites was higher in male i.e. 25% as compare to female i.e. 15.63 %. Among male patients various parasites detection of cryptosporidia was 14.71%, giardia 4.41%, cyclospora 2.94% and isospora was 2.94%. Among female patients various parasites detection of cryptosporidia was 6.25%, giardia 0%, cyclospora 0% and isospora was 9.38%.

Among all patients detection of cryptosporidia was 12%, giardia was 3%, cyclospora was 2% and isospora was 5%.

Multiple parasitic infection was seen in two patients. One patient was having cryptosporidia and cyclospora infection and another patient was having cyclospora and isospora infection.

DISCUSSION

Infections of the gastrointestinal tract are common in patients with AIDS. The impact of some relatively new spore/oocyst-forming intestinal protozoa, such as *Cryptosporidium*, *Isospora*, *Cyclospora* and *Microsporidia* on patients with AIDS is severe¹³. Infections caused by these parasites cannot be differentiated clinically unless specific faecal examination is carried out.

Patients with some type of immunocompromised condition and those submitted to immunosuppressive therapy have an increased probability of acquiring parasitic infections, generally with a high degree of severity.^{17,18}

In present study, the prevalence of opportunistic gastrointestinal parasite shows 19% which is very near to the study of Arun Aggarwal study which shows 18% prevalence³².

Prevalence of giardia trophozoite was 3 % in present study which is comparable to study of John F. Lindo³³ 1.92%, K.N.Prasad³⁴ 3.8% and Mohammed Awole³⁵ 2.08%.

In 2% of cases there was multiple opportunistic parasite was found.

Study suggests opportunistic parasitic infection of gastrointestinal tract is highly prevalent among HIV positive person.

We believe our data could help health professionals to deal better with HIV infected patients. We also believe our data reinforces the need of prevention of opportunistic infection, which is a one of the major cause of morbidity and mortality in HIV positive patients.

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