

OPPORTUNISTIC INTESTINAL PROTOZOAN PARASITIC INFECTION IN HIV POSITIVE PATIENT IN JAMNAGAR, GUJARAT

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Abstract

The case definition of AIDS encompasses a spectrum of infections and malignancies, labelled as opportunistic infections. In recent years, numerous studies have outlined the emergence of opportunistic gastrointestinal protozoa that have caused diarrhoeal illness among HIV – AIDS patients. Purpose of present study was to determine the prevalence of opportunistic intestinal protozoal parasites in HIV positive patients with or without diarrhoea. A total of 100 stool samples of HIV positive patients were examined for protozoal parasites by microscopy. Protozoal parasites were detected in 25 HIV positive patients; in 41.37 % of patients with diarrhoea and in 2.38% of patients without diarrhoea. *Isospora belli* appeared to be a predominant parasite associated with diarrhoea among HIV patients. *Cryptosporidium* revealed of its asymptomatic carriage along with its association with acute and chronic diarrhoea. Prevalence of *Microsporidia* and *Cyclospora cayetenensis* was found to be very low.

Key words: HIV, diarrhoea, opportunistic protozoa.

Introduction

The progressive destruction of immune system by chronic HIV infection leading to progressive fall in level of CD 4 cells (<200 to <50) is known to be responsible for the occurrence of infections by all types of opportunistic micro – organisms in HIV infected individuals. Protozoal parasites that cause mild to self limited disease in immunocompetent host can cause prolonged, intractable, recurrent and severe diarrhoea in HIV patients inducing weight loss and cachexia. Numerous studies have

outlined the emergence of important gastrointestinal protozoa like *Microsporidia* sp, *Cryptosporidium* sp, *Isospora belli* and *Cyclospora cayetenensis*.^{1,2} Besides these, HIV infected individuals also develop infection with *Giardia lamblia*³ and *Entamoeba histolytica*.⁴ Studies have highlighted *Cryptosporidium* as the predominant pathogen with significant association to diarrhoeal cases⁵ along with high prevalence of asymptomatic carrier status among HIV positive individuals. Latent infections can be reactivated and may lead to active diseases later when the immunity of patient diminishes further.

Isospora belli usually results in protracted and some times profuse diarrhoeal disease (in the absence of appropriate antibiotic therapy) in AIDS patient.⁶ Studies on intestinal microsporidiosis from developed countries have revealed 6 – 60% prevalence

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among AIDS patient.² Cyclosporiasis has been reported with increasing frequency in United States, Latin America, Nepal, Peru & New Guinea. The disease usually presents with watery diarrhoea of 19 – 43 days^{7,8,9}, if diarrhoea in AIDS patients.⁷ Since the diarrhoea due to parasitic aetiology among HIV patient is on rise during recent times as the reports are being available increasingly with time, the present study was undertaken to examine the prevalence of opportunistic enteric parasites among HIV patients attending G.G.S. Hospital, Jamnagar, Gujarat.

Methods

A cross-sectional study was carried out in 100 known HIV infected cases attending Guru Gobind Singh Hospital, Jamnagar during 2002 (January – December) in the Department of Microbiology. All known HIV positive patients consenting to give two consecutive stool samples were included in the study. The HIV infected clients included in the study were divided into two groups on the basis of absence or presence of diarrhoea. The clients with diarrhoea were further sub-divided on the basis presence of acute or chronic diarrhoea (Table 1). All the patients enrolled in the study were interviewed using a standard questionnaire to collect the relevant clinical information.

Eligibility criteria: All patients with a HIV sero-reactive test (result as per national guidelines) and consenting to participate in

the study by providing two consecutive faecal specimens were included in the study, till the sample-size was achieved.

Two consecutive faecal specimens were collected from all the clients and subjected to examination for protozoal parasites by wet mount after concentration¹⁰. Direct smear and smears made from deposits of sedimentation were stained with Modified Acid Fast stain and examined for coccidian parasites¹⁰.

Results

The 100 HIV infected clients included in the study were between 20-50 years of age and belonged to HIV Clinical Stage 3 or 4. Of 100 patients, the protozoal parasites were detected in 25 patients. Of these 25 patients, 24 had diarrhoea, while one patient was asymptomatic.

Isospora belli was identified in 10 % of HIV infected patient (Table 1). *Isospora* was detected in 17.24 % patients with diarrhoea (in 10% of cases with acute diarrhoea, and in 21% of cases with chronic diarrhoea). *Cryptosporidium* was detected in 13.79 % of patients with diarrhoea (in 10% of cases with acute diarrhoea, and in 15.8% of cases with chronic diarrhoea) and in 2.38 % cases without diarrhoea. *Cyclospora*, *Microsporidia* and *Entamoeba histolytica* were detected in 1 %, 2% and 3% of HIV infected patients respectively.

Table 1 Protozoal Parasites detected from HIV Patients

| Parasitic Spp. | Total No. of Cases (n=100) | Cases with Acute Diarrhoea (n=20) | Cases with Chronic Diarrhoea (n=38) | Cases Without Diarrhoea (n=42) |
|--------------------------------|-------------------------------|--------------------------------------|--|-----------------------------------|
| <i>Isospora belli</i> | 10 (10%) | 2 (10%) | 8 (21%) | 0 |
| <i>Cryptosporidium parvum</i> | 9 (9%) | 2 (10%) | 6 (15.8%) | 1 (2.4%) |
| <i>Microsporidium sp.</i> | 2 (2%) | 0 | 2 (5.3%) | 0 |
| <i>Cyclospora cayetenensis</i> | 1 (1%) | 0 | 1 (2.6%) | 0 |
| <i>Entamoeba histolytica</i> | 3 (3%) | 1 (5%) | 2 (5.3%) | 0 |

Discussion

The study demonstrated a very high prevalence (25%) of protozoal parasitic infection in HIV infected individuals. The prevalence of parasitic infection was higher in patients having diarrhoea as compared to patients without diarrhoea (41.37% vs. 2.38%). *Isospora belli* was found to be predominant cause of morbidity in symptomatic clients (Table 1). These findings are analogous to those documented in similar studies conducted in different part of the world in HIV infected individuals^{11, 13, 14}. The prevalence of *Isospora* was 17.24 % in patients with diarrhoea which was slightly higher as compared to the similar study from South India¹¹. *Isospora belli* infections are common in patients with AIDS and chronic diarrhoea from developing countries and found to be 12-19 % of patients of diarrhoea in the countries of Zambia, Haiti and Uganda.⁵

Cryptosporidium parvum appeared to be a second predominant parasite. Isolation of *Cryptosporidium* was relatively rare in our study (9.0%) compared to other studies (30.0%) in HIV patients¹³. Association of *Cryptosporidium* 13.79 % in diarrhoeal patients in our study correlates with the study done in Chennai.¹¹ Detection rate of *Cryptosporidium* oocyst found to be 2.38 % in asymptomatic HIV patients. Other studies have reported *Cryptosporidium* as the predominant pathogen with significant association to diarrhoeal illness as well as its association with asymptomatic case.¹¹ Occurrence of *Cryptosporidium* in both symptomatic and asymptomatic cases indicates high risk of infection of this parasite.

Detection rate of *Cyclospora* in this study found to be 1.0% in HIV patients which correlates with the study in Chennai (0.6 %)¹¹

and lower compared to other similar study (11.0%).¹³ Microsporidia was detected in 2 cases with chronic diarrhoea. It causes proliferate disease in immunocompromised and is usually associated with chronic diarrhoea.¹⁵

Entamoeba histolytica was detected in 3% of cases with diarrhoea. Test to prove pathogenicity of the detected 3 species of *Entamoeba histolytica* could not be done, but the presence of this parasite in the AIDS patient could not be neglected otherwise.⁴

Difference in the incidence of intestinal protozoal parasitic infection reported by different workers^{11,13,14} can be attributed to the difference in geographical distribution of parasites, sanitary practices and different selection of cases. Though mixed infection is seen in AIDS patient but in our study we did not observed any such finding. Though the reasons for the same were not ascertained, this could be attributed to the limited study sample.

The present study to the best of our knowledge is the first report of the detection of opportunistic protozoal parasite in HIV patients in Saurashtra region. The rate of infection with a particular enteric parasite in HIV/ AIDS patient will depend upon the endemicity of that particular parasite in the region. Laboratory support is essential to determine the carrier, latent and clinical infection. Simple stool examination with modified acid fast staining technique on a concentrated stool samples may reveal the existence of parasitic infections. The technique is economical, rapid and good for differentiating infective agents of intestinal protozoal parasites.

Conclusion

The study enhances awareness of the prevalent opportunistic protozoal parasite in the region of Saurashtra and limits extensive evaluation or nonspecific treatment of diarrhoeal illness in HIV patients. An early and accurate diagnosis of infection will not only help in institution of specific treatment and prophylaxis (Chemoprophylaxis where ever necessary) to prevent relapse/ reoccurrence of infections in HIV patients but also in institution of various preventive measures. This will not only prolong the life of HIV infected individuals but also improve the quality of life.

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