Intestinal parasitic infections in ART naive and on-ART AIDS patient
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Introduction

- Intestinal parasitic infections in human immunodeficiency (HIV) seropositive patients vary with geographical topology and are associated with socioeconomic variables.
- A consistent association between HIV infection and intestinal parasitism has been reported in tropical regions [1] and more in patients with CD4+ T-cell counts less than 200 cells/mm³.
- The clinical spectrum caused by intestinal parasites among HIV positive patients ranges from asymptomatic to severe infection leading to chronic diarrhea, dehydration and malabsorption [2].
- Almost 80% of the AIDS patients die because of AIDS related infections including intestinal parasitic infections rather than HIV infection itself [3].
- Present hospital based study was conducted to determine the spectrum of intestinal parasitism in adult HIV/AIDS (Acquired Immunodeficiency Syndrome) patients in our tertiary care setting.

Materials and methods

- A total of three hundred and forty two (n=342) individuals were enrolled and were screened for intestinal parasitism.
- Of these study population one hundred and forty two (n=142) were adult HIV seropositive and were further subdivided into ART naive (n=80) without diarrhea (CD4+ T-cell count > 350 cells/µL) and sixty two (n=62) on-ART with diarrhea.
- The rest two hundred (n=200) were non-HIV individuals comprising of hundred each with diarrhea (n=100) and without diarrhea.
- Modified Ziehl-Neelsen (MZF) staining was performed on fecal smear to detect oocysts of Cryptosporidium spp., C. cayetanensis and C. bell [4] and modified Trichrome staining for microsporidia [5].
- Diagnostic PCR assay was carried out targeting 18S rRNA gene of the genus Cryptosporidium [6, 7], C. cayetanensis [7], C. bell [8] and Enterocytozoon bieneusi (E. bieneusi) [9] using previously published primers, and PCR products were visualised in 2% gels stained with ethidium bromide.

Microscopic examination

- Fig. 1 Oocysts of Cryptosporidium spp.
- Fig. 2 Oocysts of C. cayetanensis
- Fig. 3 Oocysts of C. bell
- Fig. 4 Spores of E. bieneusi

PCR assay

- Fig. 5 PCR for 18S rRNA gene of Cryptosporidium spp. Lane 1: Negative control Lane 2: Positive control Lane 3 & 4: Positive samples Lane 5: 100 bp molecular marker Lane 6: Blank
- Fig. 6 PCR for 18S rRNA gene of Cryptosporidium cayetanensis Lane 1: Negative control Lane 2: Positive control Lane 3 & 4: Positive samples Lane 5: 100 bp molecular marker

Ethical statement

The ethical approval for this study was obtained from institutional ethical committee of our institute, before the commencement of the study. The participants were informed that the procedure used did not pose any potential risk and their identities and personal particulars will be kept confidential. During the meetings, enrolled individuals were informed that their participation is absolutely voluntary and they can withdraw from the study at any point of time without giving any reasons.

Results

- A total of one hundred and thirty one (n=131) intestinal parasites could be identified from the study population [HIV seropositive (n=142) and non-HIV (n=200) individuals].
- Amongst the intestinal parasites, 64% (84/131) were identified in HIV seropositive and 36% (47/131) in non-HIV individuals (OR=4.7, 95% CI 2.95 to 7.52; p<0.0001).
- Of these eighty four parasites identified in HIV seropositive (74%, 62/84) were found in patients with diarrhea and (26%, 22/84) without diarrhea (p<0.001).
- Out of the total parasites identified (n=131), 25% (33/131) were coccidial and microsporidial, that included Cryptosporidium spp. (13/131, 9.9%), Cystosporic belli (13/131, 9.9%), Cyclospora cayetanensis (3/131, 2.2%), Enterocytozoon bieneusi (4/131, 3%), 42% (55/131) were non-coccidial pathogenic and helminthic parasites that includes Giardia intestinalis (27/131, 20.6%), Entamoeba histolytica/Entamoeba dispar (14/131, 10.8%), Ascaris lumbricoides (11/131, 0.7%), Strongyloides stercoralis (4/131, 3%), Hymenolepis nana (8/131, 6.8%), 33% (46/131) other parasites were identified including Blastocystis hominis (26/131, 19.8%), Entamoeba coli (18/131, 6.8%) and Endolimax nana (8/131, 6.1%).
- The higher frequency of infection as well as multiple parasitic infections were observed at CD4+ T-cell counts of less than 200 cells/µL and was two-fold higher compared to individuals having counts more than 350 cells/µL (p<0.0001).

Discussion

Most of the parasites identified in HIV sero-positive patients, were coccidial and microsporidial implicating a clear association of these parasites in HIV sero-positive patients.

Cryptosporidium as a cause of diarrhea in HIV seropositive patients has been reported from India, and more importantly in patients with CD4+ T-cell counts of less than 200 cells/µL. At a higher CD4+ T-cell count, generally spontaneous clearing of the parasites take place. In a resource poor setting like ours, patients usually go undiagnosed for long periods and present late in the course of disease. Consequently patients usually presents with profound, persistent and multiplicative parasitic infections.

References


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