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Research Article

A STUDY ON CRYPTOSPORIDIUM PARVUM IN HIV/AIDS SERO-POSITIVE PATIENTS IN RAICHUR

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ABSTRACT

Introduction: HIV infected patients are susceptible to a variety of common and opportunistic infections due to progressive decline in their immunity status. Cryptosporidiosis that cause intestinal infections in immuno-compromised patients and most frequently encountered. Due to higher incidence of HIV/AIDS patients in our area, i.e., Raichur district of Karnataka state, it is important to study the opportunistic parasitic diseases like cryptosporidiosis and its correlation with the immune status of the patient, which is one of the predominant infection and can cause severe morbidity and mortality. Detection of this parasite will help in proper management of the patients.

Objectives

- To determine the Cryptosporidiosis in various age groups of HIV/AIDS sero positive patients.
- To determine and compare the Cryptosporidiosis in HIV/AIDS sero-positive patients with diarrhoea and without diarrhoea.
- To detect cryptosporidiosis by ELISA.
- Correlate the CD4 count with incidence of cryptosporidiosis.

Materials and methods

- Stool samples of 110 patients with diarrhoea and without diarrhoea with HIV/AIDS collected during 2014 to 2016 RIMS, Raichur .
- ELISA: Antigen detection technique was employed for cryptosporidial antigen in the faeces for the diagnosis. (DRG Kit ELISA, Germany)

Results: Out of 110 HIV sero-positive 62 patients with diarrhoea and 48 were without diarrhoea. CD4 counts among cryptosporidium parvum isolated HIV/AIDS patients, 78 patients below 200cells/cumm and 27 patients above 200cells/cum. Among 110 HIV/AIDS patients 105 patients were detected Cryptosporidium parvum antigen by ELISA Method. In 110 cases Of HIV/AIDS patients studied, the males were 61 cases and females were 49 cases Among 110 HIV patients, 105 patients were detected Cryptosporidium parvum antigen by ELISA Method

Conclusion: Routine examination for cryptosporidium oocysts in stool should be performed in all AIDS patients.

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INTRODUCTION

Cryptosporidium species are classify by Centre for Disease and Prevention (CDC) as an upcoming pathogen. This parasite resides in the intestinal and respiratory surface of mammals, birds, reptiles and humans leads to cryptosporidiosis¹,

In immunocompromised patients, it causes severe and prolonged diarrhoea and is considered one of the most

important enteric opportunistic infections in AIDS². Currently, Cryptosporidial infection is major as AIDS significant illness. Timely detection of this parasite helps us to introduce the antibiotic treatment and decrease mortality and morbidity³.

AIDS/HIV management programs are able to benefit from the awareness of importance and to predict the significant HIV

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coinfections⁴. The cryptosporidiosis spread in human beings in various routes together with person-to-person, waterborne, food-borne and zoonotic⁵.

Cryptosporidium oocysts could be tough to identify apart from laboratories by the frequent and constant experience toward positive samples to facilitate investigative skill⁶. Newly, various groups have described to employ the enzyme-linked immunosorbent assays (ELISA) for the identification and also as a confirmatory test. Enzyme-linked immunosorbent assays (ELISAs) reported to be upto 10 times more sensitive than acid-fast staining, making the ELISA method. Currently the "gold standard" for antigen detection in infected stool samples⁶.

The present study was under taken to determine the *Cryptosporidium parvum* with correlation CD4 counts in HIV/AIDS patients RIMS, Raichur District, Karnataka.

MATERIALS AND METHODS

Type of Study: The present work conducted is a type of cross sectional descriptive study.

Source of Data: The study group consisted of inpatients and out patients of Medical, Pediatrics, Skin and STD, ART Centre and other departments of Raichur Institute of medical sciences, Raichur.

Inclusion criteria: All HIV/AIDS sero positive patients with and without diarrhoea were included in the study.

Exclusion criteria: HIV/AIDS sero negative patients.

Specimen collection and pathogen detection technique. The study was conducted in Raichur institute of Medical sciences, Raichur, Karnataka. Stool samples of 110 patients with diarrhoea and without diarrhoea among HIV/AIDS collected during the period of 2014 to 2016 RIMS, Raichur. Samples were collected with detailed clinical history and processed for antigen detection.

The technique employed.

ELISA: Antigen detection technique is employed for *Cryptosporidium* antigen in the stool samples of HIV/AIDS patients. (DRG Kit ELISA, Germany)

Statistical Analysis: P < 0.005 is considered to be significant, since test is < 0.001. Hence it is considered to be highly significant. One tests P value is highly significant. Test of significance used is Chi square test. Software used is statistical IBM SPSS 22

Ethical consideration

Approval of institutional Ethical committee was taken by Raichur Institute of Medical Sciences, Raichur. Before the beginning of the study and written informed consent was obtained from the each participant.

RESULTS

Out of 110 HIV sero-positive patients 62 with diarrhoea and 48 were without diarrhoea (Table -1). Among 110 HIV sero-positive patients 78 patients CD4 count were below 200cells/cumm³ and 27 patients CD4 count were above 200cells/cumm³ (Chart -1). In 110 cases Of HIV/AIDS patients studied, the males were 61 cases and females were 49 cases

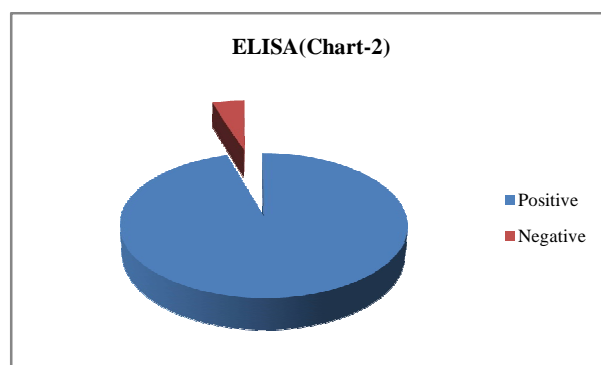
(Table-2) and Age wise distribution in 110 HIV patients (Table-3). Among 110 HIV patients, 105 patients were detected *Cryptosporidium parvum* antigen by ELISA Method (Chart-2) and ELISA test performed showing in Figure-1.



Figure 1 (ELISA).

Negative control-A, Positive control-B and Positive samples

A total of 110 samples were subjected to ELISA, of which 105 samples were found positive.



110 HIV sero-positive individuals with/without diarrhea. (Table -1)

Study group	Description	No. of individuals
I	HIV/AIDS with diarrhoea	64 (58.18%)
II	HIV/AIDS without diarrhoea	46 (41.81%)

Sex distribution in the study group (Table-2)

Sex	Study group (%)
Male	61 (55%)
Female	49 (45%)

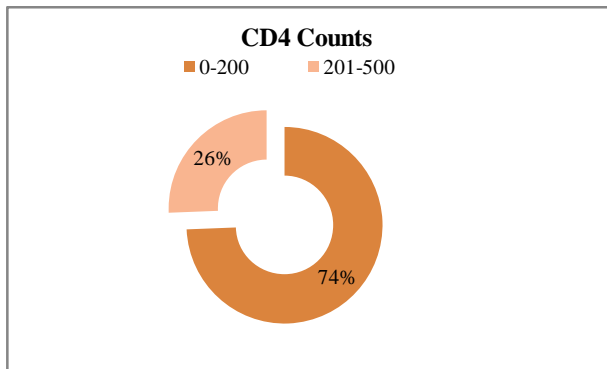
Out of 110 cases Of HIV/AIDS studied the male predominance was observed 61 followed by female population 49.

Age wise distribution (Table-3)

Age group (Years)	No. of cases	Percentage (%)
0-10	05	4.5%
11-20	06	5.4%
21-30	25	22.7%
31-40	39	39.4%
41-50	24	21.8%
>50	11	10%

This table depicts maximum number of cases were in age group of 31-40 years. Least number of cases was fund in the age groups 0-10 years & 11-20 years

Correlation of CD4 counts among 105 cases of *Cryptosporidium parvum* (Chart -1)



***Cryptosporidium parvum* identified in 105 cases diarrhoeal & Non- diarrhoeal**

Study group	No. Of Cases	Percentage (%)
Diarrhoeal	63	60%
Non-diarrhoeal	42	40%

Out of 105 cryptosporidium parvum in 63 cases diarrhoeal & 42 cases Non-diarrhoeal.

DISCUSSION

Due to low socioeconomic status, poor hygiene, unavailability of safe drinking water and frequent contact with livestock may be responsible for the high percentage of Cryptosporidiosis.

Cryptosporidiosis can be acquired at any time during the course of HIV infection. Major mortality and morbidity occur almost exclusively in patients with CD4 below 200cells/cumm.

The presence of cryptosporidium in HIV positive cases with and without diarrhoea indicates an existing high risk of infection by this parasite.¹⁰

In my study Prevalence of Cryptosporidiosis by ELISA was 95% among HIV sero-positive patients in RIMS Hospital, Raichur, Karnataka.

A survey of intestinal parasites among the HIV positive asymptomatic patients revealed the highest percentage i.e. 94.4%of *Cryptosporidium* species among all parasites. Similarly in other study the prevalence of *Cryptosporidium parvum* was 98.1%*** observed by Ibrahim R. Aly, at in Egypt which is quite higher than my study⁸.Similarly in other study the the prevalence of *Cryptosporidium parvum* was 100%*** observed by S.Masarat, in Kashmir.⁹

Recommendation

1. That all individuals living with HIV should have a routine examination for *C. parvum* infection, this should also include laboratory examination.
2. HIV patients should be encouraged to chlorinate their drinking water.

CONCLUSION

Routine examination for cryptosporidium oocysts in stool should be performed in all AIDS patients, regard-less of the presence or absence of gastrointestinal symptoms. Detection of *Cryptosporidium* will help in proper management in patients and increase quality of life among HIV/AIDS patients.

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