

## Detection of *Cryptosporidium Parvum* in HIV/AIDS Sero-Positive Patients in Correlation with CD4 Count in Raichur

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Received: 10<sup>th</sup> June 2017, Accepted: 18<sup>th</sup> June 2017, Published: 1<sup>st</sup> July 2017

### Abstract

HIV infected patients are susceptible to a variety of common and opportunistic infections due to progressive decline in their immunity status. Cryptosporidiosis that causes intestinal infections in immuno-compromised patients and most frequently encountered. Due to higher incidence of HIV/AIDS patients in the area, Raichur district of Karnataka, it is very important to detect Cryptosporidiosis in correlation with the immune status of the patient.

**MATERIALS AND METHODS:** Stool samples of 110 patients with diarrhoea and without diarrhoea but with HIV/AIDS were collected during 2014 to 2016 RIMS, Raichur. Here standard acid fast Method has been used for the identification.

**RESULTS:** Out of 110 HIV sero-positive samples investigated 62 patients with diarrhoea and 48 were without diarrhoea. CD4 counts among *cryptosporidium parvum* isolated HIV patients, 78 patients were below 200cells/cumm and 27 patients were above 200cells/cum. Among 110 HIV patients considered 85 patients were detected with *Cryptosporidium-parvum* in Modified acid fast staining method.

**CONCLUSION:** Routine examination for cryptosporidium oocysts in stool should be performed in all AIDS patients so as to investigate this infection.

**Key words:** HIV, *Cryptosporidium parvum*, CD4 count, Modified acid fast method.

### Introduction

*Cryptosporidium* is an intestinal coccidian parasite belonging to apicomplexan protozoa. This parasite completes the life cycle both in humans and animals through zoonotic and anthroponotic transmission resulting in a disease state called as cryptosporidiosis. Through oro-faecal route normally oocysts are transmitted by direct host-to-host contact and through contamination of food or water in an indirect route <sup>1</sup>. In three years child with self-limiting enterocolitis, the *Cryptosporidium* was reported as causative agent and recognized first as a human cryptosporidiosis in 1976<sup>2</sup>.

In 1982, in homosexual man with HIV/AIDS infection was isolated with *Cryptosporidium* and considered as an important pathogen in human. From 1980's onwards *Cryptosporidium* became as

significant pathogen in human beings.<sup>3</sup> Gastrointestinal infections are quite common in patients with HIV/AIDS infection. Reports shows that in developed countries about 30-60% of AIDS patients suffering with diarrhoea and in developing countries 90%. In HIV/AIDS infection diarrhoea is a common clinical symptom.<sup>5</sup>

In 1993, in Milwaukee, Wisconsin, a very big waterborne outbreak occurred. 403,000 people were affected among that 5,000 cases with cryptosporidiosis been identified and in immunocompromised patients 100 fatalities occurred<sup>9</sup>. This incident created a much interest in public health<sup>9</sup>. Currently, US Centers for Disease Control and Prevention included as cryptosporidiosis is frequently reported in HIV-infected individuals and is listed as an AIDS-defining illness in Clinical Category C<sup>6</sup>.

In HIV individuals gastrointestinal tract infection was a common in addition hepato-biliary and respiratory tract infections also encountered.<sup>7</sup> Cryptosporidiosis in HIV/AIDS patients with chronic or watery diarrhea, leads to severe dehydration, abdominal pain, vomiting, nausea, low-grade fever, malnutrition and significant weight loss. If these infections were chronic leads severe morbidity and mortality in HIV/AIDS patients<sup>8</sup>.

The occurrence of the Cryptosporidiosis is generally unestimated because in usual laboratory techniques this parasite is not detected. Due to insufficient studies, hence there is a need to study the prevalence of *Cryptosporidium* with correlation of CD4 counts in HIV sero positive patients<sup>4</sup>. The present study was under taken to determine the *Cryptosporidium parvum* in HIV/AIDS patients RIMS, Raichur District, Karnataka.

### Materials and Methods

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

**Source of Data:** The study group consisted of inpatients and out patients of Medical, Paediatrics, 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 and patients attending out-patients and admitted in wards, who presented with diarrhoea and without diarrhoea were collected with detailed clinical history were processed for microscopy and antigen detection. For microscopy, processing was done directly from fresh stool samples.

#### The following techniques are employed.

Modified Kinyoun's staining method: smears made from fresh stool samples under oil immersion (100x) objective of light microscope for identification of cryptosporidium parvum oocysts in the smear.

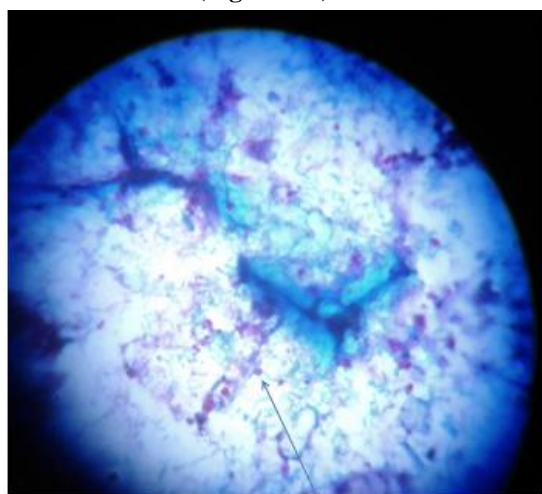
#### Statistical Analysis

Data was analysed through the statistical software prism and test used was Fisher's exact test, since one observation is zero.

#### Ethical consideration:

Approval of institutional Ethical committee was taken prior to beginning of the study and written informed consent was obtained from the each participant.

**Cryptosporidium parvum by Modified Kinyoun's acid fast method (Figure – 1).**



Oocysts of *Cryptosporidium parvum*

#### Results and Discussion:

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/cumm<sup>3</sup> and 27 patients CD4 count were above 200cells/cumm<sup>3</sup> (Table - 2). In 110 cases Of HIV/AIDS studied, the males were 61 and females were 49 (Table-3). Among 110 HIV patients, 85 patients were detected

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

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

#### Correlation of CD4 counts among 105 cases of *Cryptosporidium parvum* (Table-2)

CD4 counts(cells/cumm <sup>3</sup> )	No. of Cases	Percentage (%)
0 - 200	78	71%
201 – 500	27	24%

#### Sex distribution in the study group (Table-3)

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

Cryptosporidiosis is recognized as an important gastroenteritis disorder of immuno-compromised patients. 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<sup>8</sup>.

In present study, prevalence of infection with *Cryptosporidium parvum* oocysts in stool examination by modified Zeihl-Neelsen staining method in HIV/AIDS patients was 77%, which is similar to Darji's study in Ahmedabad<sup>10</sup>. The prevalence of *Cryptosporidium parvum* was 39% in the study by Syed Shafequr at Hyderabad which is lesser than my study<sup>11</sup>. Similarly in other study the prevalence of *Cryptosporidium parvum* was 100% observed by Shahina Muntaz, at Peshawar<sup>12</sup>, which is quite higher than my study.

## **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.

## **Acknowledgements**

The Author is grateful to Dr. Kusal. K. Das sir Research member in BLDE University, Vjayapur for his help and constant encouragement. And would like to thank MR. Ramesh, Statistician for his guidance and technical assistance.

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