



## A Case of Cryptosporidium Diarrhea in a Patient with Underlying Immunocompromised Due To Human Immuno Deficiency Viral Infection

Author

**Dr N.Ashok Viswanath<sup>1</sup>, Dr V.M. Somasunder<sup>2</sup>, Ms. S.Subalakshmi<sup>3</sup>**

<sup>1</sup>Assistant Professor, <sup>2</sup>Associate Professor, <sup>3</sup>Senior Resident

Department of Clinical Microbiology, Panimalar Medical College Hospital & Research Institute,  
Varadhrajapuram, Poonamallee Chennai – 600123

Corresponding Author

**Dr N.Ashok Viswanath** M.B.B.S., M.D., D.N.B., PG Dip Infectious Diseases

Assistant Professor, Department of Clinical Microbiology, Panimalar Medical College Hospital & Research  
Institute, Varadhrajapuram, Poonamallee Chennai – 600123

### Abstract

A 48-year-old male, with underlying immunocompromised due to Human Immuno Deficiency infection, presented with the complaints of severe loose stool for 1 week. On examination, the patient was malnourished and afebrile with clinical evidence of some dehydration with no response to empirical anti bacterial and anti parasitic drugs. On history, the patient was diagnosed to suffer from HIV infection a decade back and was on irregular medication (Anti retroviral drugs). Stool for bacterial culture and sensitivity does not show any growth of bacterial pathogen. Stool for ova and cyst examination with routine wet mount and iodine mount showed round beads suggestive of artifacts. Kinyoun cold acid fast staining method of staining by using 1 % sulfuric acid as a decoloriser showed the presence of acid-fast oocyst in the chemically fixed fecal smears. The patient was started on Azithromycin and Nitazoxanide as per cdc guidelines, following which the patient recovered from diarrhea and discharged

**Keywords:** Infective Diarrhea, Cryptosporidium diarrhea, Underlying immunocompromised.

### Introduction

Cryptosporidium parvum infection is rare in patients without any underlying immunosuppression and immunocompromised, but prevalent among high risk population such as underlying immunosuppression like patients on long term corticosteroids, chemotherapeutic agents and immunocompromised due to conditions like HIV infection.

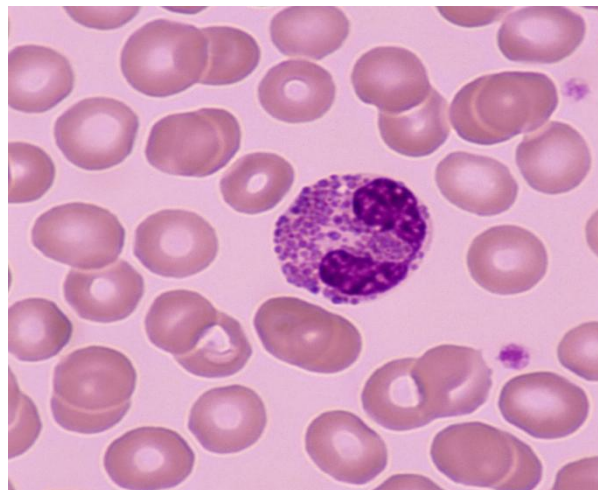
Usually Cryptosporidium infection presents as diarrhea leading to varying degree of dehydration leading to dehydration associated manifestations<sup>(1)</sup>. The Diarrhea which is caused by Coccidian

parasites like Cryptosporidium can be easily missed if special staining examination like kinyoun acid fast staining is not carried out in the fecal samples in the clinical microbiology laboratory without proper test ordering or clinical details.

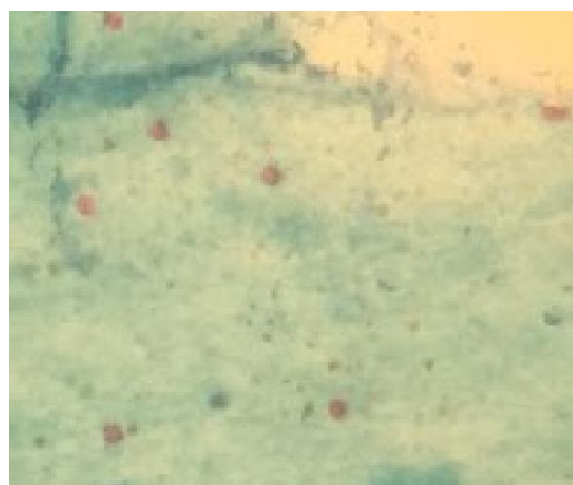
The treating physician may easily miss Cryptosporidium associated diarrhea without a proper ordering of test to clinical microbiology lab as special staining are performed on certain samples only on clinicians request. Cryptosporidial diarrhea does not respond to usual commonly used empirical anti diarrheal agents which contribute to treatment failure and poor patient prognosis.

### Case Report

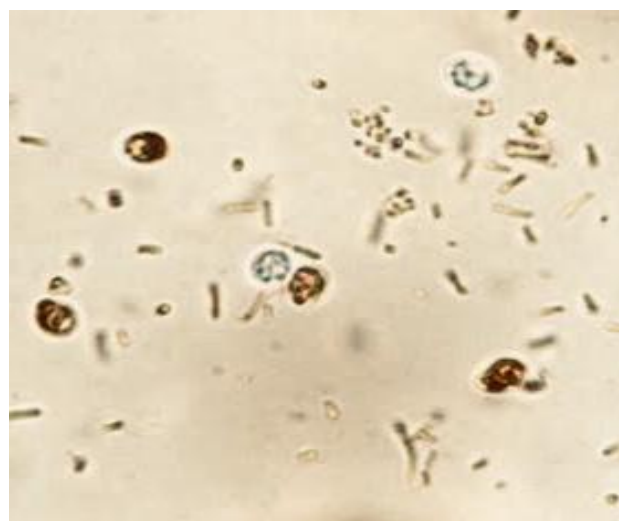
A 48-year-old male, native of Chennai, Tamilnadu underlying immunocompromised due to underlying Human Immuno Deficiency infection with improper treatment (Anti Retroviral Drugs). He presented with the complaints of severe loose stool for 1 week. On examination, the patient was malnourished, irritable, sunken eyes, Increased thirst with clinical diagnosis of some dehydration due to diarrheal etiology. Patient was hemodynamically stable; no abnormalities were noted on systemic examination. A diagnosis of Infective diarrhea with some dehydration was made and he was started on intravenous fluids and was started on empirical antibiotics – Ciprofloxacin and Metronidazole for seven days, with no improvement. After 7 days, stool sample was sent for culture sensitivity & routine examination for ova and cyst. Routine laboratory workup revealed elevated eosinophil count (**Fig 1**). CD4+ estimation was carried out with flowcytometry which revealed low CD4+ count (**Fig2**). Neither history of similar illness was reported. The sample was subjected to routine stool culture and sensitivity by plating onto the appropriate stool culture medium such as Deoxycholate citrate agar (DCA) which does not yield growth of any pathogen. Stool for ova and cyst examination was carried out using wet mount and iodine mount technique which showed the presence of multiple round artifact like bodies (**Fig 3, 4**). Considering the patient's underlying HIV infection which was reconfirmed at the lab by antibody testing (**Fig 5**), low CD4+ count, elevated eosinophil count – Stool examination was repeated again for the detection of any ova and cyst by iodine mount examination which does not reveal any ova and cyst. Additional staining was carried out on the chemically fixed fecal smear using Kinyoun cold acid fast staining method revealed Acid fast oocyst of appropriately 4–6  $\mu$ m diameter. Without this simple additional procedure which is not followed routinely in all fecal smears due to its procedural complexity, the parasite would have been missed leading to missed diagnosis of Cryptosporidial diarrhea.



**Figure 1:** Peripheral blood smear stained by Leishman stain demonstrating – Eosinophil



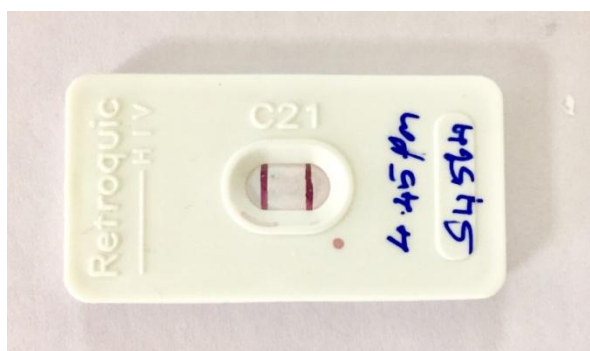
**Figure 2:** Kinyoun acid fast staining of methanol fixed fecal smear counterstained using malachite green showing multiple pink beads against bluish green background.



**Figure 3:** Iodine mount of the stool sample revealing – Round yellow artifact like bodies



**Figure 4:** Wet Mount of feces sample revealing numerous – Round artifacts like bodies



**Figure 5 :** HIV test Reactive for HIV 1 Antibody by Rapid Immunoconcentration method

### Discussion

Cryptosporidiosis is a parasitic infection caused by the protozoal parasite *Cryptosporidium*, a parasite that infects many species of animals, including humans, causing acute gastroenteritis, abdominal pain, and diarrhea<sup>[1]</sup>. *Cryptosporidium* was first discovered by Tyzzer during the year 1907<sup>[2]</sup>. *Cryptosporidium* is transmitted through the fecal–oral route, i.e., by ingesting viable oocysts contaminated water and edible items<sup>[3]</sup>. In healthy individuals without any underlying immunocompromisation or immunosuppression, cryptosporidium infection usually produces a bout of watery diarrhea, although the infection in some persons may not lead to the symptoms<sup>[4]</sup>

*Cryptosporidium* was not considered as a significant human pathogen causing acute diarrhea disease until 1982, when it was first recognized as a causative

agent of self-limiting diarrhea causing parasite in the general population and a life-threatening disease for immunocompromised & immunosuppressed patients<sup>[5]</sup>. *Cryptosporidium* is considered one of the most commonest opportunistic infections for patients with acquired immunodeficiency syndrome but easily missed most of the time without appropriate lab ordering of appropriate test leading to complications. During the preliminary iodine mount examination, only artifact like round bodies were noted. Later, the chemically fixed fecal samples were stained using acid fast staining method using Kinyoun acid fast staining method which revealed the presence of oocyst of *Cryptosporidium*. Upon laboratory diagnosis, the patient was started on Azithromycin and Nitazoxanide, following which the patient improved rapidly showed excellent response to the combined treatment using the above mentioned anti microbials.

### Conclusion

Acute diarrheal diseases presenting with dehydration of varying severity is not uncommon. Patients with underlying immunosuppression or immunocompromisation due to any condition such as Human Immuno Deficiency infection especially with low CD4+ Count should be investigated thoroughly.

There are no specific clinical pointers towards likelihood of protozoal diarrhea especially Coccidian parasites such as *Cryptosporidium* and only a high index of suspicion with relevant tests and its treatment, would aid in early diagnosis and prevent complications in these patients.

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