



## Case Study

# Stool Microscopy Examination to HIV Diagnosis: A Case Report of Gastroenteritis by Isosporiasis

Gopal Kumar<sup>1</sup>, Manodeep Sen<sup>2</sup> and Amitava Roy<sup>3</sup>

<sup>1</sup>Department of Microbiology Institute of Medical Sciences,  
Banaras Hindu University, Varanasi, India

<sup>2</sup>Department of Microbiology, Dr Ram Manohar Lohia Institute of  
Medical Sciences, Lucknow, India

<sup>3</sup>Department of Gastroenterology, Dr Ram Manohar Lohia Institute of  
Medical Sciences, Lucknow, India

\*Corresponding author

## ABSTRACT

Enteric opportunistic parasitic infections are one of the major source of diarrheal disease in developing countries mainly in HIV infected/AIDS patients. *Isospora belli* is one of the common causes for watery diarrhea in HIV/immunocompromised patients. Clinical presentation may mimic those of inflammatory bowel disease and irritable bowel syndrome. The mode of transmission is feco-oral, through food or water contaminated with human feces. Symptoms and signs may include- Profuse, watery, nonbloody, offensive-smelling diarrhea which may contain mucus as well. Symptoms of Isosporiasis suggest a toxin-mediated mechanism, but no toxin has yet been identified. Many patients with HIV are diagnosed at late stage of the disease. Indicator infections like *Isospora belli* will help in early diagnosis and treatment of HIV and it will improve the quality of life of such patients. *Isospora belli* infection usually causes a mild and protracted illness unless the patient is immunocompromised. The incubation period ranges from 4-15 days. The diagnosis is done by stool/ duodenal biopsy specimen's microscopy and modified Acid-fast staining. Herewith we report a case of young adult female having watery diarrhea due to *Isospora belli*.

## Keywords

Watery diarrhea,  
HIV/AIDS,  
*Isospora belli*,  
Immuno  
compromised  
individual

## Introduction

Diarrhoea is one of the most common presenting complaints of patients infected with HIV. It is one of the leading causes of morbidity and mortality in these patients. *Cryptosporidium*, *Isospora*, *Cyclospora* and *Microsporidia* are common opportunistic enteric parasites encountered in these

patients. Proper and early identification of these opportunistic parasites is important in view of AIDS epidemic in India. *Isospora belli* was first described by Virchow in 1860 in villi of intestinal mucosa at autopsy (Cox, 2002). It is an AIDS-defining illness if infection persists >4 weeks. Infection is

acquired through fecal contaminated food or water & generally diagnosed by examination of stool and /or duodenal biopsy specimens with acid fast staining (Koru *et al.*, 2002).

### Materials and Methods

Stool examination for ova and parasites was done. Saline and iodine wet preparations were examined under low power (10X) and high power (40X) objectives of light microscope for detection of protozoan cysts.

Modified Ziehl-Neelsen's staining (Kinyoun's modification of acid fast staining) was done on smears made from stool specimen/concentrated suspension after methanol fixation. The slides were screened under low power (10X), high power (40X) and oil immersion (100X) objectives of light microscope for identification.

### Case report

This is a case report of a 32 year old housewife who presented to our hospital in the department of Gastroenterology with history of chronic diarrhea which was painless, whitish, and watery 6–8 per day since last one year, without blood and mucous. On examination patient had mild to moderate dehydration. On abdominal examination diffuse tenderness was present. Stool sample was received for routine microscopy examination. The saline and iodine mount of stool showed many cysts resembling *Isospora belli* measuring about 30µm X 12µm in size with granular center. Stool smear was made and modified acid fast staining was performed. Pink coloured (acid fast) oocysts of *Isospora belli* were seen (Fig. 1). Size and shape of cysts were variable.

Blood examination revealed Haemoglobin was 10.5gm. Total leukocyte count was

11,000. HIV ELISA came out to be positive. Post-test counselling was done. Patient responded to the treatment with oral cotrimoxazole. Patient was referred to ICTC for counselling and ART.

### Results and Discussion

Immature oocysts measuring around 30 × 12 µm with thin translucent wall and a large sporoblast seen on wet mount. On Modified Ziehl-Neelsen's staining, granular red colored oocysts against a blue background (methylene blue) were seen.

Blood examination for HIV came out to be positive by ELISA.

Enteric parasitic infections still remains an important cause of morbidity and mortality in developing countries especially among HIV-infected persons with and without diarrhea (WHO, 1981).

The causative pathogen of Isosporiasis is *I. belli*, a protozoan that belongs to the subclass Coccidia in the phylum Apicomplexa that resides in the gastrointestinal tract. Humans are the only known hosts for *I belli*, and has no known animal reservoir. The life cycle of the parasite is direct and does not require an intermediate host. *Isospora belli* oocysts are excreted with the feces of infected individuals as immature, non-sporulated and non-infective forms. People of all ages are susceptible to infection, although it tends to be more serious in infants and young children. It usually causes non-bloody diarrhea in tropical and subtropical countries. It causes gastroenteritis in immunocompromised as well as immunocompetent patients (Parija, 2006). Cryptosporidiosis and Isosporiasis have been categorized by CDC as AIDS defining infection. In India, the prevalence of *I. belli*

infection ranges from 2.5% to 14% in HIV-positive patients (Saigal *et al.*, 2013; Rudrapatna *et al.*, 1997; Kumar *et al.*, 2002; Kaushik *et al.*, 2008). In spite of widespread awareness about HIV large number of patients is diagnosed at very late stage of the disease.

Studies from South India have reported a higher prevalence of *Isospora belli* than *Cryptosporidium* (Gupta *et al.*, 2008). Pathogenesis of Isosporiasis is characterized by invasion of epithelial cells of distal duodenum and proximal jejunum with resulting cell damage. Extra intestinal forms are rare. *Isospora belli* is diagnosed by detection of the oocysts in stool or sometimes in bile samples. Oocysts can be observed in wet /iodine preparations or acid-fast stained smears of concentrated stool specimens. Although immunocompromised hosts respond well, though less rapidly, they have a high relapse rate once therapy is stopped and thus typically require indefinite prophylaxis after therapy. Amongst the intestinal coccidian parasites Isosporiasis is an AIDS-defining illness and can effectively be treated with trimethoprim-

sulfamethoxazole so an appropriate workup for HIV infection should be performed. Careful examination of stool sample and use of concentration techniques increases rate of detection of *Isospora belli* cyst. So, stool microscopy is equally important as is stool culture.

Many coccidian parasites are considered AIDS defining opportunistic pathogens according to CDC. Detection of these parasites by easy and relatively less costly techniques will direct clinicians to screen such patients for HIV at early stage. This will help in early diagnosis and treatment of patient and will offer quality life to such patients.

### Conclusion

Presence of a parasitic agent like *Isospora* in stool should trigger the search for some immunocompromised state and vice versa. Isosporiasis is an AIDS-defining illness, so an appropriate workup for HIV infection should be performed. Steps should be taken for prevention and early diagnosis of such diseases in these patients.

**Fig.1** Modified ZN stain of *Isospora belli* (about 30 µm X 12 µm) (100X)



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