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Case Report

Microbiology Section

Severe *Cystoisospora belli* Diarrhoea in Post Renal Transplant Patient

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ABSTRACT

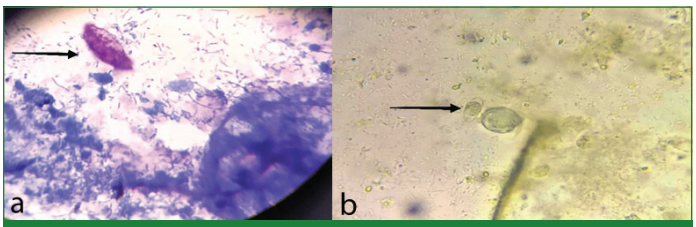
Cystoisospora belli (*C. belli*) is an opportunistic protozoal parasite. It is prevalent in tropical and subtropical areas of the world. It is frequently encountered in immunocompromised patients with Acquired Immunodeficiency Syndrome (AIDS) and other immunodeficiency illnesses. Infection usually occurs due to faecal contamination of food and water. Chronic severe watery diarrhoea occurs in *C. belli* infected patients. *C. belli* is diagnosed by demonstration of characteristic oocyst in the stool sample. The common methods used for stool examination are wet saline mount, iodine mount, and modified acid fast staining. Although *C. belli* is distributed worldwide and more prevalent in developing countries, it is hardly reported from India. Most of the cases reported from India are in Human Immunodeficiency Virus (HIV)-positive patients and not many are reported in renal transplant patients. Here, a case of a 27-year-old male post renal transplant patient having severe diarrhoea has been presented. The patient complained of watery diarrhoea off and on for last one month for which he had taken some medicine from his local level but was not relieved. The patient was negative for HIV and was on immunosuppressive drugs. The stool sample of the patient was examined by direct wet mount, iodine mount and acid fast staining. On microscopy, characteristic oocysts of *C. belli* were detected. The patient was given combination treatment to which he responded well.

Keywords: Chronic diarrhoea, Immunocompromised patients, Oocyst, Protozoal parasite

CASE REPORT

A 27-year-old male presented with diarrhoea and fever to the Nephrology Outpatient Department. The diarrhoea was described as pale yellow without frank blood. He had a frequency of 6-8 episodes per day for more than one month off and on. The past history revealed that the patient was a renal transplant recipient and his cousin was the donor. The patient was on Sirolimus (2 mg OD) for immunosuppression. Haematological investigations showed slightly increased total leucocyte count (13100/mm^3). Biochemical laboratory tests indicated blood urea 36 mg/dL, serum creatinine 1.3 mg/dL, serum Alanine Transaminase (ALT) 108 IU/L, Aspartate Aminotransferase (AST) 52 IU/L, serum sodium 139 mEq/L, and potassium 3.6 mEq/L. He was also tested for Human Immunodeficiency Virus (HIV), and results were negative for Enzyme Linked Immunosorbent Assay (ELISA). The patient had no travel history to foreign countries.

The stool was pale yellow in colour and semisolid in consistency with presence of mucus. The pH was 7.0 and occult blood was strongly positive. *C. belli* was diagnosed by demonstration of characterstic oocyst in the stool sample. The methods used for stool examination were wet saline mount, iodine mount and modified acid fast staining. On microscopy many *Cystoisospora* oocysts were present in stool, elliptical in shape, with one or both ends slightly tapered. [Table/Fig-1a,b] Characteristically, most of the parasitic stages were with one or two sporoblasts and rarely immature forms.



[Table/Fig-1]: a) Microscopic photograph showing acid fast *C. belli* oocysts in stool smear (100X); b) *Cystoisospora* oocysts in wet mount of stool (40X).

The patient was treated symptomatically and with Bactrim-double-strength Trimethoprim-Sulfamethoxazole (TMP-SMZ) BD for 10 days and nitazoxanide (500 mg BD for three days). Repeat stool examination after two weeks on follow-up did not show *C. belli* oocysts even after concentration.

DISCUSSION

C. belli is a coccidian, unicellular protozoan parasite that exists in the gastrointestinal region. It frequently causes diarrhoea, nausea, vomiting, abdominal pain, dehydration, weight loss, and headache in tropical and subtropical environments. Infection occurs by ingestion of sporocysts, containing oocysts [1,2]. The infection can cause disease in both adults and children, although it frequently occurs in immunocompromised patients. It is commonly spread through consumption of contaminated food or water. The diagnosis is based on examination of stool or duodenum biopsy. Acid fast staining is employed to detect *C. belli* oocysts. The routine analysis of infection with *C. belli* is challenging. The oocysts are hard to differentiate from some components in faeces, which makes it difficult to make a definitive diagnosis [3]. Mostly recipients with any transplant suffer from some type of gastrointestinal difficulties. The detection of human intestinal coccidian parasites depends on the comprehensive examination of stool specimens, but apart from ova and parasites (O and P) examination, an acid fast stain is recommended for detection of *Cystoisospora* oocysts [3,4].

Advances in the diagnosis of infectious diseases occur regularly, although the first form of diagnosis of parasitic infections is still by light microscopy of stool by an experienced microbiologist. Cystoisosporiasis is one of the indicators of immunocompromised status of patients. The patient responded well to treatment. A 7-10 day course of TMP-SMZ is impactful and provides quick clinical and parasitological cure [5]. Other treatment regimens are also available (pyrimethamine-sulfadoxine), but there is limited data to support this [6]. Fluoroquinolones can be used; however they have been found to be less effective as compared to TMP-SMZ [7].

In India, among most of the patients the disease is reported from HIV positive patients, such as studies by Haider M et al., Ghadage DP et al., Shah UV et al., Mudholkar VG and Namey RD, and Kumar SS et al., [8-12]. To the best of the authors' knowledge, the first case of cystoisosporiasis in a renal transplant patient was reported by Marathe A and Parikh K from Gujarat [13], and the present study reports the second case in a renal transplant patient in India. Moreover, this is the first reported case of *C. belli* infection in a renal transplant recipient in Western Uttar Pradesh.

CONCLUSION(S)

Cystoisosporiasis occurs in immunocompromised patients and transplant patients along with those infected with HIV. Although, it is prevalent in immunocompromised patients, it can be prevented through personal hygiene and sanitation practices. Thorough washing of vegetables and fruits and sterilisation of water generally prevents fecal-oral transmission from contaminated food, water, and possibly, environmental surfaces. Moreover, a thorough history of patients regarding travel to endemic areas is important.

REFERENCES

[1] Lindsay DS, Dubey JP, Blagburn BL. Biology of *Isospora* spp. from humans, nonhuman primates, and domestic animals. Clin Microbiol Rev. 1997;10(1):19-34.

[2] Ng ER, Markell EK, Fleming RL, Fried M. Demonstration of *Isospora belli* by acid-fast stain in a patient with acquired immune deficiency syndrome. J Clin Microbiol. 1984;20(3):384-86.

[3] Garcia LS, Bruckner DA. Diagnostic Medical Parasitology 3rd ed ASM Press, Washington.

[4] Helderman JH. Prophylaxis and treatment of gastrointestinal complications following transplantation. Clin Transplant. 2001;15:29-35.

[5] Pape JW, Verdier RI, Johnson Jr WD. Treatment and prophylaxis of *Isospora belli* infection in patients with the acquired immunodeficiency syndrome. N Engl J Med. 1989;320(16):1044-47.

[6] DeHovitz JA, Pape JW, Boncy M, Johnson Jr WD. Clinical manifestations and therapy of *Isospora belli* infection in patients with the acquired immunodeficiency syndrome. N Engl J Med. 1986;315(2):87-90.

[7] Verdier RI, Fitzgerald DW, Johnson Jr WD, Pape JW. Trimethoprim-sulfamethoxazole compared with ciprofloxacin for treatment and prophylaxis of *Isospora belli* and *Cyclospora cayetanensis* infection in HIV-infected patients: A randomized, controlled trial. Ann Intern Med. 2000;132(11):885-88.

[8] Haider M, Sharma A, Dogra V, Mishra B. *Isospora* spp. in chronic diarrhea: A case report. J Pharm Bioallied Sci. 2013;5(4):327.

[9] Ghadage DP, Mali RJ, Wankhade AB, Bhore AV. Gastroenteritis due to *Isospora belli* in immunocompromised teenager. Int J Healthcare Biomed Res. 2014;2(4):64-66.

[10] Shah UV, Purohit BC, Chandralekha D, Mapara MH. Coinfection with *Cryptosporidium, Isospora* and *S. stercoralis* in a patient with AIDS- A case report. BMC Public Health. 2003;21(2):137-38.

[11] Mudholkar VG, Namey RD. Heavy infestation of *Isospora belli* causing severe watery diarrhea. Indian J Pathol Microbiol. 2010;53(4):824.

[12] Kumar SS, Ananthan S, Lakshmi P. Intestinal parasitic infection in HIV infected patients with diarrhoea in Chennai. Indian J Med Microbiol. 2002;20(2):88-91.

[13] Marathe A, Parikh K. Severe diarrhoea due to *Cystoisospora belli* in renal transplant patient on immunosuppressive drugs. Indian J Med Microbiol. 2013;31(2):185-87.

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