



Detection of Emergence *Cyclospora cayetanensis* in A HIV⁺ /AIDS Patient with Diarrhea from Tehran: A Case Report

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(Received 21 Jan 2014; accepted 14 Apr 2015)

Abstract

Coccidian protozoa of *Cyclospora cayetanensis* are obligate intracellular apicomplexan parasites that infect the mucosal epithelium of the small intestine of immunocompetent and immunocompromised persons. A 25- years old woman from around, Tehran with complaint of faintness and fatigue with HIV positive/AIDS confirmed eight months ago was admitted in Imam Khomeini Hospital, Tehran, Iran in 2014. The patient suffered from intestinal and lung symptoms like watery diarrhea, flu-like symptoms. The stool was examined by direct preparation and concentration technique, stained with modified acid-fast staining method, and observed with light and then Immunofluorescence microscope. The stool cultivation was made in dichromate potassium medium and diagnosis of *Cyclospora* infection was finally made according to observation of *Cyclospora* oocysts almost 10 µm in acid-fast staining method and autofluorescence of *Cyclospora* under Immunofluorescence microscope. The patient was initially treated with azithromycin, tazocin and fluconazol because of lung lesions and diarrhea and relative remission was observed. *Cyclospora* sp. causes an intestinal infection particularly in immunocompromised patients.

Keyword: *Cyclospora cayetanensis*, HIV, Diarrhea, Coccidian protozoa

Introduction

Cyclospora cayetanensis is an important emerging cause of diarrhea worldwide that leads to morbidity and mortality in immunocompetent and immunocompromised persons (1).

Clinical presentation in immunocompetent persons is low to moderate self-limited diarrhea but in immunocompromised persons it cause prolonged watery diarrhea and severe intestinal injury (2).

Cyclospora was first identified as a human pathogen in three patients from Papua, New Guinea and concluded that they could be a coccidian of the genus *Isospora* (3), and in 1989, Hart et al. described *C. cayetanensis* in an AIDS patient in Chicago (4). The first case of human cyclosporiasis in

Iran was reported in 1996 by Rezaeian et al. in an AIDS patient in 1996 (5) and the second one was reported in a 10- years - old boy with diarrhea from Tehran in 2000 (6).

Case report

A 25- years old woman from around Tehran with complaint of faintness and fatigue with HIV+/AIDS patient that HIV infection was confirmed by western blotting and AIDA phase confirmed by CD4+ count less than 200/ µl, eight months ago was admitted in Infectious Diseases Section of Imam Khomeini Hospital, Tehran

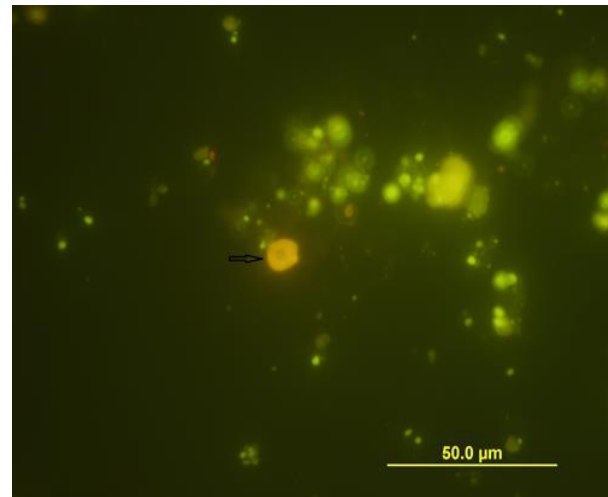
University of Medical Sciences, Iran in 2014. The patient suffered from intestinal and lung symptoms like watery diarrhea, flu-like symptoms, sputum, cough, lung lesions from one month before. She had dysphagia, periumbilical tenderness, non-dysenteric diarrhea, tenesmus with discharge of 2-3 times a day and low-grade fever (38 °C).

The result of clinical laboratory tests showed LFT: normal, PPD: negative, leucopenia (WBC: 3200), ESR: 41 and CRP: 28 (elevated), CD4:7.1% (CD4 control: 46.2%), CD8: 4% (CD8 control: 26%), CD4/CD8: 1.7% and result of stool culture was negative.

The stool sample of patient referred to Intestinal Protozoology Laboratory, Department of Medical Parasitology and Mycology, School of Public Health, Tehran University of Medical Sciences to evaluate for opportunistic infection. The stool was examined by direct preparation and concentration technique, stained with modified acid-fast staining method (7), and observed with light and then Immunofluorescence microscope. The stool cultivation was made in dichromate potassium medium (2.5%) in order to follow oocysts sporulation.



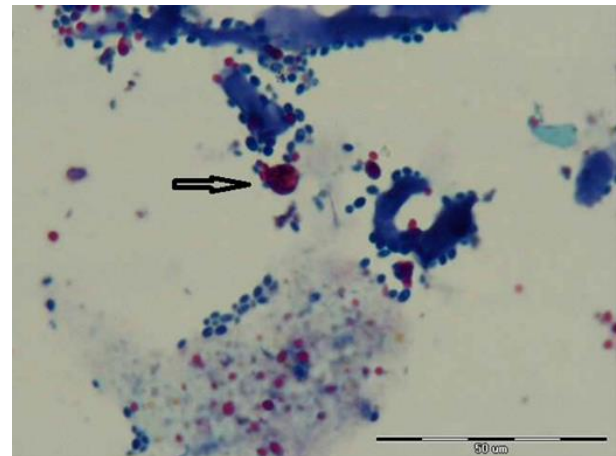
A



B



C



D

Fig.1: *Cyclospora cayetanensis* oocyst in, concentrated stool samples (wet mount), A; autofluorescence under immunofluorescence, B; oocysts sporulation after one week in dichromate potassium medium, C; modified Acid fast stain method, D (1000X magnification) (Original pictures)

In the wet mount smears an undifferentiated spherical oocysts containing a morula were observed (Fig.1: A). The oocysts had bilayer walls and had autofluorescence under fluorescence microscopy (Fig.1:B). The oocyst size was 10 μm , after 1 week for oocysts sporulation the oocyst had two sporocysts (Fig.1:C). Each sporocyst contained two sporozoites that are folded in two. *Cyclospora* oocysts stained variably with acid-fast staining method (Fig.1:D). Some oocysts stained dark red, whereas others stain pale pink or do not take the stain at all, but the size of oocysts were larger than *cryptosporidium* and the oocysts wall were different. The diagnosis of *Cyclospora* infection was finally made.

The patient was initially treated with azithromycin, tazocin and fluconazol because of lung lesions and diarrhea and relative remissions were observed.

Discussion

In developed countries, *C. cayetanensis* is commonly detected from travelers to Latin America, the Indian subcontinent and South East Asia (8-10). In developing countries *Cyclospora* oocysts can be transmitted in humans through exposure to fecally contaminated water, fresh fruit and vegetables like raspberries and contact with soil (1).

However, in some endemic areas, infection rates of *Cyclospora* up to 41.6% have been found and most of the cases are asymptomatic (11). Infection rates of 5.3% in diarrheic children, 6.8-9.8% in AIDS patients, and 6.1-11.9% in different countries have been reported (11).

The first case of cyclosporiasis was reported in a 16 years- old hemophilic patient who accepted factor XIII, acquired AIDS and treated by cotrimoxazol in 1996 (5) and the second one was reported in a 10- years - old boy with diarrhea from Tehran in 2000 (6). The infection rate of *Cyclospora* in Indian HIV positive patients is much higher than that of the HIV negative controls (20.44% vs. 1.5%, respectively) (12).

In developing countries, *Cyclospora cayetanensis* was associated with prolonged watery diarrhea (1), whereas in immunocompromised patients, in-

cubation period is about 7 days and the symptoms are more severe and present with nausea, abdominal cramp, watery diarrhea, low-grade fever and weight loss that lasting for weeks and even months (13,14).

Cyclospora is an emerging pathogen protozoon and many laboratories are not too much experience for diagnosing oocysts. In the past, the *Cyclospora* oocysts have been misdiagnosed as the “Big Crypto” because in acid fast staining method both of them were partial acid fast (7,15).

Cryptosporidium is more prevalent in HIV- positive patients than *cyclospora* as a pathogen causing enteritis (15). PCR is helpful in diagnosing of *Cyclospora* but has limited accesses in different laboratories (15) and no serological tests available to diagnose of *Cyclospora*.

Regarding to limitation of this study, PCR was unavailable and only parasitological method was used to identify the parasite.

Conclusion

Cyclospora sp. causes an intestinal infection particularly in immunocompromised patients.

Acknowledgements

The authors declare that there is no conflict of interests.

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