

# Was this the First Case of *Isospora belli* in Saudi Arabia?

Majed H. Wakid

Department of Medical Laboratories Technology, Faculty of Applied Medical Sciences  
King Fahd Medical Research Centre, Head of Diagnostic Parasitology Laboratory, Special Infectious Agents Unit  
King Abdulaziz University, Jeddah, Saudi Arabia

## Correspondence

Majed H. Wakid  
Faculty of Applied Medical Sciences,  
Department of Medical Laboratories  
Technology, King Fahd Medical Research  
Centre, Head of Diagnostic Parasitology  
Laboratory, Special Infectious Agents Unit King  
Abdulaziz University, Jeddah,  
Saudi Arabia  
e-M: mwakid@kau.edu.sa

Submission: 05 Jan. 2019

Accepted: 04 May 2019

## Citation

Wakid MH. Was this the first case of *isosporea belli* in Saudi Arabia? JKAU Med Sci 2019; 26 (1): 1-2.  
DOI: 10.4197/Med. 26-1.1

**Copyright:** ©The Author(s), YEAR. Publisher. The Journal of King Abdulaziz University - Medical Sciences is an Official Publication of "King Abdulaziz University". It is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permit unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## Dear Editor-in-Chief,

*Isospora belli* (now known as *Cystoisospora belli*) is a protozoan coccidian intestinal parasite belonging to the phylum Apicomplexa. It occurs worldwide, but most especially in hot tropical and subtropical climates. The risk of infection is greater in immunosuppressed and immunocompromised patients. The first case was documented in 1915; since then several outbreaks have been reported.

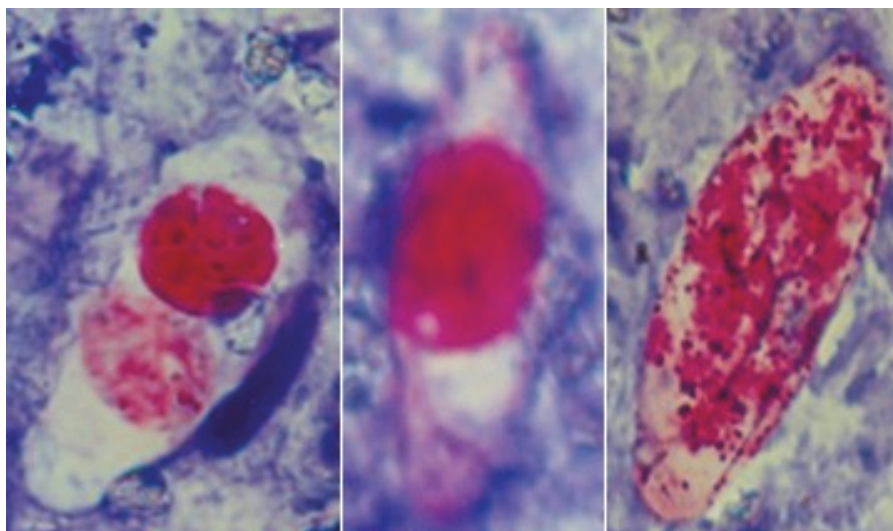
The mode of infection with isosporiasis occurs by ingestion of contaminated food or drinks containing the fully mature sporulated oocysts (disporous tetrazoic). After excystation of sporocysts in the small intestine, sporozoites invade epithelial cells and go under asexual and sexual multiplication to end up

with formation of new non-infective oocysts, which can pass in the stool. Maturation of oocysts takes place in the environment outside the body within 1-2 days, depending on the level of oxygen, heat and humidity.

The main common symptoms include abdominal pain with severe non-bloody diarrhea that may result in dehydration and weight loss mostly in children and immunocompromised patients. The manifestation could be disseminated to involve the gallbladder, biliary tract, spleen and lymph nodes. A recent study identified a new stage and DNA of the parasite in blood samples of a patient with acquired immunodeficiency syndrome (AIDS).

During the year 1992, a loose stool sample from a male patient with AIDS was sent to the diagnostic parasitology laboratory at King Abdulaziz University Hospital in Jeddah. At that time, I was the senior laboratory technologist and Dr. Azza Negm (Died in 2008, may God have mercy on her) was the head of the laboratory. The laboratory protocol included the modified Kinyoun acid-fast staining as a routine test for all samples obtained from patients with HIV, cancer or having diarrhea or watery stool. The main concern was on *Cryptosporidium*, which is one of the common intestinal opportunistic coccidian parasites. We were surprised when the number of immature oocysts of *C. belli* was high enough to be easily detectable microscopically by direct wet smears. In modified Kinyoun's stained smears, we were able to identify three forms of oocysts containing one, two or diffused sporoblasts with size ranges between 25-30 X 10-15 µm (Fig. 1). In 2014, in cooperation with the Ministry of Health, we published a study on HIV patients. None of the patients was infected with *C. belli*.

To the best of our knowledge the case in 1992 is the first with cystoisosporiasis in Saudi Arabia but was not reported or published at that time. I still have stained and unstained stool smears, which will be directed for further examination using molecular tools



**Figure 1.** Three forms of the detected oocysts.

for genotypic identification. According to the findings presented in many recent studies in other countries, I believe that cystoisosporiasis in Saudi Arabia needs more attention than we currently devote.

### Conflicts of Interest

The author has no conflict of interest.

### Disclosure

The author did not receive any type of commercial support either in forms of compensation or financial for this study. The author has no financial interest in any of the products or devices, or drugs mentioned in this article.

### Ethical Approval

Obtained.

### References

- [1] Rodríguez-Morales AJ, Castañeda-Hernández DM. Protozoa: *Cystoisospora belli* (Syn. *Isoospora belli*). In book: Reference Module in Food Science 2019. DOI 10.1016/B978-0-08-100596-5.22641-3.
- [2] Wang ZD, Liu Q, Liu HH, Li S, Zhang L, Zhao YK, Xing-Quan Zhu XQ. Prevalence of *Cryptosporidium*, microsporidia and *Isoospora* infection in HIV-infected people: a global systematic review and meta-analysis. *Parasit Vectors* 2018; 11(1): 28.
- [3] Akateh C, Arnold CA, Benissan-Messan D, Michaels A, Black SM. *Cystoisospora belli* gallbladder infection in a liver transplant donor. *Case Rep Infect Dis* 2018: 3170238.
- [4] Basyoni MMA, Elghobary HAF. Genotypic identification of *Cystoisospora* in immunocompromised patients using TM-variation analysis. *Korean J Parasitol* 2017; 55(6): 601-606.
- [5] Lai KK, Goynes HE, Hernandez-Gonzalo D, Miller KA, Tuohy M, Procop GW, Lamps LW, Patil DT. *Cystoisospora belli* infection of the gallbladder in immunocompetent patients: a clinicopathologic review of 18 cases. *Am J Surg Pathol* 2016; 40(8): 1070-1074.
- [6] Velásquez JN, di Risio CA, Etchart CB, Chertcoff AV, Nigro MG, Pantano ML, Ledesma BA, Vittar N, Carnevale S. First report of *Cystoisospora belli* parasitemia in a patient with acquired immunodeficiency syndrome. *Acta Parasitol* 2016; 61(1): 172-177.
- [7] Sanad MM, Thagfan FA, Al Olayan EM, Almogren A, Al Hammaad A, Al-Mawash A, Mohamed AA. Opportunistic coccidian parasites among Saudi cancer patients presenting with diarrhea: prevalence and immune status. *Res J Parasitol* 2014; 9(2): 55-63.
- [8] Wakid MH, Azhar EI, Bakhsh HA, Ayoub HM, Al-Ghamdi AA. Isolation and genotyping of *Cryptosporidium* among HIV and non-HIV infected patients in Jeddah, Saudi Arabia. *World J Med Sci* 2014; 11 (1): 98-106.