

## A REPORT OF 10 CASES OF HUMAN ISOSPORIASIS IN IRAN

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### ABSTRACT

Human infection with the coccidia parasite, *Isospora belli* is relatively uncommon. Human isosporiasis in Iran was first reported by Hadjian in 1961.<sup>5</sup> Yearly, about 200 stool samples have been examined by direct and formol-ether concentration techniques in the Protozoology Unit, School of Public Health, Tehran University of Medical Sciences.

In addition to the common protozoal and helminthic infections, there were 10 cases of human infection with *Isospora belli* during a 10 year stool examination in our laboratory.

*MJIRI, Vol.5, No. 1,2, 45-47, 1991*

### INTRODUCTION

*I. belli* was named by Wenyon in 1923.<sup>10</sup> Wenyon and others in 1923 also reported *I. belli* from military troops stationed in Egypt, Palestine, and especially in Turkey, as well as other eastern Mediterranean countries. This parasite was most prevalent during the World Wars hence Wenyon named it *I. belli*.<sup>4</sup> Faust, et al. in 1961 reported 33 cases of *I. belli* infection in Colombia and tabulated numerous reported cases from all countries of the western hemisphere except Canada.

Later on, it was reported from Canada by Eaton in 1966.<sup>3</sup> Several observations were reported based on mucosal biopsies of the small intestine from patients with symptomatic *I. belli* infection. This parasite infection has also been reported by Forthal, et.al. in 1984 among male homosexual patients with enteritis from Los Angeles.<sup>2</sup>

Human isosporiasis in Iran was first reported in 1961 by Hadjian who found a case of *I. belli* in a 5-year-old female from Tehran.<sup>5</sup> Another case of *I. belli* has been reported by Motakef, et. al. in a 9-year-old girl from Mashhad.<sup>7</sup> The first case of human infection with *I. hominis* (*Sarcocystis hominis*) in Iran has been reported by Rezaeian and Ghorbani in 1985 in Tehran.<sup>8</sup> The present paper presents 10 cases of *I. belli* in Iran.

*Isospora belli* is a parasite with schizogony and sporogony stages in the human small intestinal mucosa. Morphological observations on *I. belli* by light micros-

copy and electron microscopy by Brandborg, et. al. in 1970<sup>1</sup> and Trier, et. al. in 1974<sup>10</sup> have shown the schizonts, merozoites, gametocytes, gametes, and oocysts stages.<sup>1,10</sup> The oocysts undergo sporulation stages 48 hours after expelling from the intestine. In this phase if the oocysts are ingested by man they will be infective.

Infections often are symptomless and self-limited, but number of workers have reported symptoms ranging from mild gastrointestinal distress to severe di-

Table I. Number of patients found infected with *Isospora belli* in different parts of Iran according to age, sex, and clinical symptoms

Case number	Locality	Sex	Age (years)	Clinical symptoms
1-	Ghazvin	F.	1.5	diarrhea, abdominal pain
2-	Ghazvin	F.	5	severe diarrhea, crampy abdominal pain, weight loss, Charcot-Leyden crystals in feces
3-	Taleghan	M.	20	diarrhea, crampy abdominal pain
4-	Ghazvin	F.	25	loose stool, abdominal pain
5-	Ghazvin	F.	35	formed stool, mild abdominal pain
6-	Dezful	M.	14	diarrhea, abdominal pain, Charcot-Leyden crystals in feces
7-	Tehran	M.	25	formed stool, mild abdominal pain
8-	Tehran	M.	7	severe diarrhea, crampy abdominal pain, Charcot-Leyden crystals in feces
9-	Karaj	F.	11	loose stool, crampy abdominal pain
10-	Malayer	M.	4	formed stool, mild abdominal pain

## Human Isosporiasis in Iran

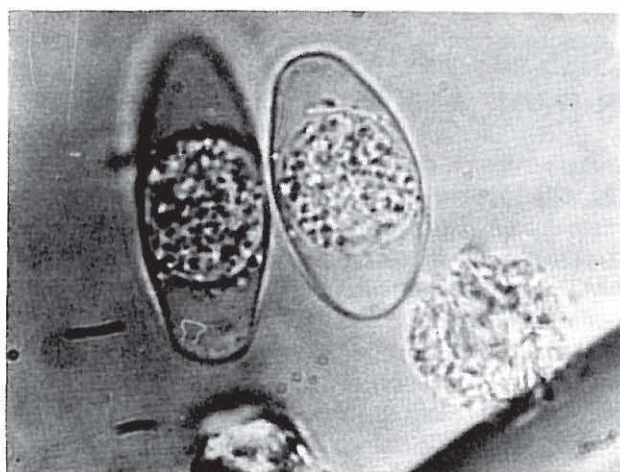


Fig. 1.

× 1125

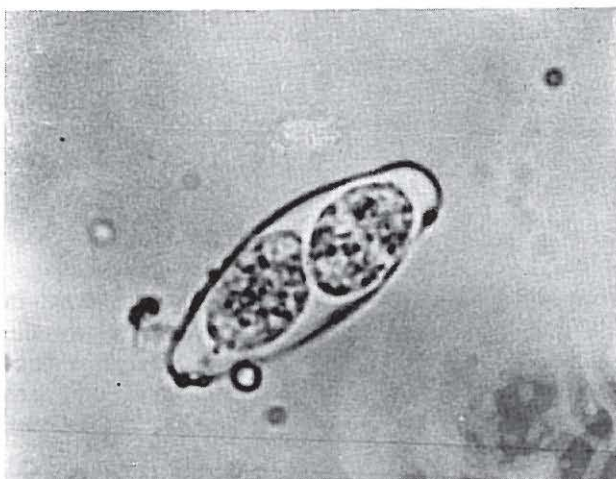


Fig. 2.

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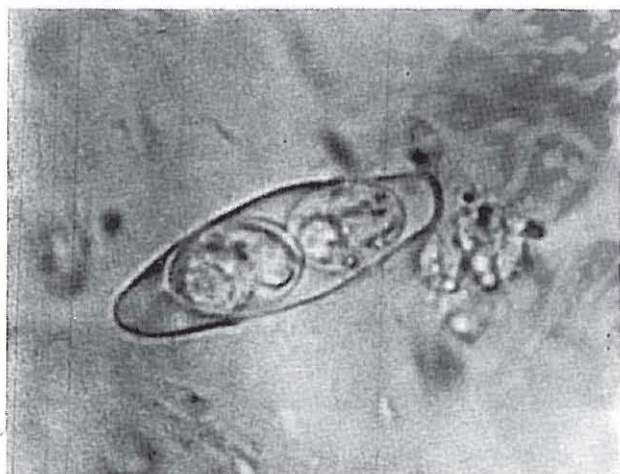


Fig. 3.

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Figs. 1, 2, 3. Different development stages of *Isospora belli* oocyst outside the intestine.

Length, 28-32  $\mu$

Width, 12-17  $\mu$

arrhea with fatal consequences.<sup>6,11</sup> Chronic diarrhea, vague or crampy abdominal pain, weight loss, weakness, malaise and anorexia are clinical features of patients with isosporiasis. The infection may evoke eosinophilia, even in asymptomatic patients.

The loose, pale yellow, and offensive stool is suggestive of a malabsorptive process. Fecal fat may be increased, and jejunal biopsy may reveal the villous atrophy commonly associated with the malabsorption syndrome.

### MATERIALS AND METHODS

The demonstration of *I. belli* oocysts in the feces usually is accomplished by examination of unstained or iodine-stained direct smear preparation or concentration techniques of fresh fecal specimens. From 1978-1988, annually about 2000 stool samples have been examined by direct and formol-ether concentration techniques in our laboratory.

### RESULTS

In addition to the common protozoal and helminthic infections, there were 10 cases of human infection with *I. belli*. The diagnosed cases have been shown in Table I according to sex, age, inhabitant areas, and clinical symptoms.

The sporulation stages of *I. belli* oocysts are shown in Figs. 1-3. The size of oocyst ranged from 28-32 microns long by 12-17 microns wide.

The infected patients with *I. belli* complained of intestinal discomfort and had loose and steatorrheic feces, except cases no. 5, 7, and 10 which had normal formed feces.

### DISCUSSION

Of the coccidia infecting man, the two species most frequently encountered in the intestine are *I. belli* and *S. hominis*. With both species the oocysts are passed in the feces. *I. belli* oocysts are unsegmented and immature when passed, whereas oocysts of *S. hominis* are mature. Both contain two sporocysts, each species measure 22-33 microns in length, 10-19 microns in breadth.

The oocysts in the cases reported were passed in the unsegmented stages (Fig. 1). The oocysts were elongate to ovoid and ranged between 28-32  $\mu$  in length and 12-17  $\mu$  in width. The oocysts had two sporocysts and each sporocyst contained four sporozoites (Figs. 2, 3), after sporulation.

The clinical features which were observed in our

patients were more or less similar to those reported by Westerman and Christeinsen in 1979 and Hallak, et. al. in 1982.

The microscopic examination of fecal samples for coccidian oocysts requires experienced, careful and patient technicians. Under such conditions we may be able to detect more cases of coccidiosis.

#### ACKNOWLEDGEMENTS

The author would like to express his thanks to Dr. M. Ghorbani for his valuable advice and assistance.

I am also grateful to Miss Sh. Farnia, Mr. F. Bagheri and Mr. Gh. R. Misaghian for their technical assistance, and Mr. M. Sohrabi for preparing the photomicrographs.

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