

# Cryptosporidiosis: a cause of summer diarrhea in children

Gino A. Montessori, MD, FRCPC  
Lynn Bischoff, RT

Recent studies have suggested that some outbreaks of diarrhea in children may be caused by *Cryptosporidium*, a parasite associated with gastrointestinal and respiratory tract infection in animals. In a study of 7300 British Columbia patients with diarrhea, cryptosporidial oocysts were found in the stool samples of 46 (0.63%). It appears that the occurrence of cryptosporidiosis is related to three factors: the patient's age, the time of year and the geographic location.

Des travaux récents donnent à penser que certaines épidémies de diarrhée chez des enfants seraient causées par le *Cryptosporidium*. C'est une coccidie dont on connaît le rôle pathogène pour les voies digestives et respiratoires de certains animaux. Parmi 7300 habitants de la Colombie-britannique souffrant de diarrhée, on trouve des oocystes de *Cryptosporidium* dans les selles chez 46 (0,63%). La fréquence apparente de ce parasitisme dépend de l'âge du sujet, du moment de l'année et du lieu.

*Cryptosporidium*, a coccidian parasite associated with gastrointestinal and respiratory tract infection in animals, is known to cause severe, protracted diarrhea in immunosuppressed patients. It has become evident recently that *Cryptosporidium* may also cause acute, self-limited diarrhea in immunocompetent patients.<sup>1</sup>

The frequency of intestinal cryptosporidiosis among patients with diarrhea varies from 1.2% in Den-

mark<sup>2</sup> to 4.1% in Australia.<sup>3</sup> In a study of 1290 patients with diarrhea in Massachusetts 33 were found to have cryptosporidiosis.<sup>4</sup> Several recent reports to the Centers for Disease Control, in Atlanta, Georgia, suggest that *Cryptosporidium* might be one of the causes of small outbreaks of diarrhea among children in day-care centres.<sup>5</sup>

Only preliminary data are available on the incidence of cryptosporidiosis in Canada. In Manitoba<sup>6</sup> and Newfoundland<sup>7</sup> the incidence rates have been reported to be 1.06% and 1.14% respectively. However, Gould and Yang<sup>8</sup> examined 650 stool specimens from individuals in southern Ontario and found no cases of cryptosporidiosis.

## British Columbia study

Between October 1983 and October 1984 we examined stool samples from 7300 patients with diarrhea and found cryptosporidial oocysts in 46 cases (0.63%). Most of the 46 patients were living in urban or suburban areas of Greater Vancouver and the Lower Fraser Valley. The incidence of cryptosporidiosis peaked in August and September, when 52% of the cases were diagnosed. The mean age of the patients was 17 years, but during August and September 60% of the patients were under 6 years of age. The patients had had moderate to severe diarrhea lasting about 2 weeks, but none had required admission to hospital. Only six had a history of contact with farm animals. In one instance symptoms had developed in two members of one family within a week.

In September *Cryptosporidium* was found in the stools of 2.9% of the patients with diarrhea, its frequency ranking third after those of *Campylobacter* (6.2%) and *Giardia* (6.0%).

## Diagnosis

The laboratory diagnosis of intestinal cryptosporidiosis is easily made

with microscopic identification of the parasite in a stool sample by means of modified Kinyoun acid-fast staining or the safranin-methylene blue technique. These procedures, however, are not routinely used in screening for intestinal parasites, and cryptosporidial oocysts are difficult to detect in a wet mount of a concentrated stool sample. Our overall rate of diagnosis of intestinal cryptosporidiosis was only 0.63%, probably because we used confirmatory special staining techniques only when routine wet-mount examination yielded suspicious results.

Data about the epidemiologic features of intestinal cryptosporidiosis in humans are still scanty, but it is becoming evident that at least three factors play a role in the condition's occurrence: the age of the patient, the time of year and the geographic location. We suggest that a special stain for *Cryptosporidium* be used in the investigation of diarrhea occurring during the summer in a child under 6 years of age who lives in an endemic area.

## References

1. Navin TR, Juranek DD: Cryptosporidiosis: clinical, epidemiologic, and parasitologic review. *Rev Infect Dis* 1984; 6: 313-327
2. Human cryptosporidiosis [C]. *N Engl J Med* 1983; 309: 1325-1327
3. Tzipori S: Cryptosporidiosis in animals and humans. *Microbiol Rev* 1983; 47: 84-96
4. Wolfson J, Hopkins CC, Weber DJ et al: An association between *Cryptosporidium* and *Giardia* in stool [C]. *N Engl J Med* 1984; 310: 788
5. Cryptosporidiosis among children attending day-care centers — Georgia, Pennsylvania, Michigan, California, New Mexico. *MMWR* 1984; 33: 599-601
6. Mann E, Sekla L: Cryptosporidiosis in Manitoba. *Can Dis Wkly Rep* 1984; 10: 164
7. Ratnam S, Paddock J, Cooper AR: Prevalence of *Cryptosporidium* in diarrheic stool, Newfoundland. *Can Dis Wkly Rep* 1984; 10: 205-207
8. Gould R, Yang J: Survey of *Cryptosporidium* in stool from diarrheal patients in southern Ontario. Presented at the Conjoint Meeting on Infectious Diseases, Vancouver, Nov 28-30, 1984

From the BC Biomedical Laboratories, Burnaby, BC

Reprint requests to: Dr. Gino A. Montessori, BC Biomedical Laboratories, 7845 Edmonds St., Burnaby, BC V3N 1B9