CRYPTOSPORIDIOSIS IN MYANMAR INFANTS WITH ACUTE DIARRHEA

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Abstract. Cryptosporidiosis has been found in Myanmar for the first time in infants presenting with a mild transient form of acute diarrhea. A total of 203 fecal samples collected from those infants were examined by Kinyoun's acid fast modified method. 3.4% of infants between 2 and 11 months of age were found passing cryptosporidium oocysts. All cases presented with features consistent with findings reported by other authors from developing countries. *Cryptosporidium* was the sole microorganism isolated. Hence, cryptosporidiosis may be responsible for acute diarrhea in these Myanmar infants.

INTRODUCTION

Cryptosporidiosis is due to a coccidian protozoan parasite first recognized to cause disease in humans in 1976 (Nime *et al*, 1976). Two main forms of clinical presentation have been described : a chronic, life threatening illness in immunocompromised patients and an acute self limiting gastroenteritis in immunocompetent patients (Philips *et al*, 1992).

Worldwide prevalence of cryptosporidiosis has been documented. Many studies have established that *Cryptosporidium* causes acute gastroenteritis. It was found more frequently in the stool of children with diarrheal disease than in controls (Baxby and Harf, 1986). *Cryptosporidium* has also been identified as the causative agent in the outbreaks in day-care centers (Tangermann *et al*, 1990) and in water borne transmission (Smith *et al*, 1989).

Till now cryptosporidiosis has not yet been reported in Myanmar. This study was carried out in order to establish whether *Cryptosporidium* spp does exist in Myanmar as one of the hitherto unrecognized classes of enteropathogens related to acute diarrhea in Myanmar children.

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MATERIALS AND METHODS

This study was carried out in Thingangyun township, a semiurban area with a low socioeconomic community about 9 km from Yangon city center. Six hundred neonates were selected for the World Health Organization funded tetravalent Rhesus rotavirus vaccine trial study carried out by the department of Medical Research. The enrolled neonates were followed up and their acute episodes of diarrhea were studied.

From November 1990 to September 1991, 203 fecal samples were submitted for microbiological examination from these cohort infants during attacks of acute diarrheal episodes. These fecal samples were also screened for *Cryptosporidium* oocysts using Kinyoun's acid fast modified method (Haley and Standard, 1973).

Fecal matter admixed with mucus was selected using a sterile applicator stick and spread evenly over a 2×3 cm area of a clean flamed glass slides. After staining, the slides were examined under oil immersion objective at $\times$ 100. The *Cryptosporidium* oocysts were confirmed when distinct deep-pink round or oval bodies approximately about 4-5 μm in diameter were found. Most of the oocysts were surrounded by a clear halo embeded in the blue background of mucus or fecal matter. Some oocysts exhibited either a clear center and darker periphery or dark center and dark periphery. Nuclei were observed in some of the

oocysts. Positive control slides for reference were brought by one of us (KM) from Melbourne's Royal Children's Hospital, Australia.

Stool examination and culture from the *Cryptosporidium* positive samples were peformed for rotavirus detection by ELISA (Flewett *et al,* 1989) and for isolation of *Shigella, Salmonella* and *Vibrio cholerae* by standard methods (WHO, 1983).

Records of those infants with *cryptosporidium* positive sample were reviewed for their location, age, sex, clinical features and outcome of disease.

RESULTS

In this study, *Cryptosporidium* oocysts were identified microscopically from 7 (3.4%) infants. All of these infants with smear positive *Cryptosporidium* oocysts had watery diarrhea about 4 to 10 times a day. The duration of diarrhea ranged from one day to 15 days with a median of 7 days. Low grade fever with moderate degree of dehydration was noted in 3 cases. No vomiting was recorded. Numerous oocysts were observed in most of all the smears. *Cryptosporidium* was the only pathogen detected. All cases recovered with oral rehydration therapy. The findings are shown in Table 1. Out of 203 fecal samples studied, rotavirus was detected in 18 cases (8.6%).

DISCUSSION

The purpose of this study was to establish the existence of *Cryptosporidium* spp in Myanmar.

From the results, it is evident that *Cryptosporidium* may be responsible for acute diarrhea in 7(3.4%) infants included in rotavirus vaccine trial.

Cryptosporidium appeared to cause a mild, transient and easily managed form of diarrhea in our cases. No other pathogens were detected in those *Cryptosporidium* positive cases. Most cases were between 2 and 11 months old infants. Although our study number was small, our findings correlated well with others reports from developing countries (Cross *et al* ,1985; Ludin *et al,* 1992). Hence, one has to consider *Cryptosporidium* as one of the unrecognized agents of acute diarrhea in Myanmar.

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Table 1

Findings of *Cryptosporidium*-associated acute diarrhea in Myanmar infants.

No. of cases studied	203 infants from Thingangyun Township
Study period	November 1990 to September 1991
No. of cases detected	7 (3.4%) cases
Age range	2 months-11.5 months. Mean 6 months
Sex	M-3, F-4
Duration of diarrhea	Range 1-15 days
Degree of dehydration	2 cases with moderate degree of dehydration
Other clinical findings	3 cases presented with low-grade fever
Microscopic findings	Oocysts observed ranged from + + + + to + + +
Outcome	respond to oral rehydration therapy

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