Cryptosporidiosis among Patients with Diarrhoea Attending Nyala Hospital

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Abstract

Introduction: Cryptosporidiosis is a parasitic zoonotic non-bloody diarrhoeal disease that affects all people. Children and the immunosuppressed are more at risk than immunocompetent adults. It occurs in an epidemic as well as sporadic forms. Stool examination for Cryptosporidium oocysts has to be considered in non-bloody diarrhoea stools.

Objective: The objective of this study is to determine the prevalence of cryptosporidiosis among patients presenting with non-bloody diarrhoea to Nyala medical laboratory.

Materials and methods: This is a descriptive cross-sectional study including non-bloody diarrhoeal stool specimens of 72 patients. The stool specimens were examined for Cryptosporidium oocysts by using Safranine/ Methylene blue stain technique.

Results: Eleven (15.3%) out of 72 patients were positive for Cryptosporidium oocysts. Seven of them were below five years of age.

Conclusion: Cryptosporidiosis is a common cause of non-bloody diarrhoea especially among children. This study enrolled a small number of patients. Nevertheless we recommend inclusion of Cryptosporidium in laboratory examination of non-bloody diarrhoeal stools in certain locations.

Introduction

Cryptosporidiosis is caused by the coccidian protozoan parasite *Cryptosporidium* species[1, 2]. The disease is a zoonotic diarrhoeal disease which affects immunocompetent people as well as immunosuppressed ones [3-6]. The route of infection is feco-oral [2, 3, 4]. The entire gastrointestinal tract can be infected from lips to anus. However, the jejunum is the mostly affected part and hence the presentation is with copious watery diarrhoea[4]. It is a self-limiting in the immunocompetent patients but is chronic and non-resolving in the immunosuppressed patients [1, 4]

Routine microscopic examination of the stool and its culture does not detect *Cryptosporidium* oocysts. The diagnosis depends on staining stool with stains especially prepared for *Cryptosporidium* oocysts such as Safranine/Methylene blue and modified Ziehl Neelsen stains [7].

The treatment in the immunocompetent patients needs only fluid replacement if there is fluid deficit.[1, 2, 4] In case of immunosuppressed patients, the low immunity has to be supported in addition to fluid replacement and drugs [4, 6].

Materials and methods

In a period of one month the stools of 72 patients of different age groups with non-bloody diarrhoea were collected in leak proof dry sterile plastic containers and enrolled in this study. Immunosuppressed patients and those who were on immunosuppressive therapy were excluded.

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Macroscopic examinations were carried out for visible parasites, blood, pus and mucus.

Microscopic examination of stools wet preparations were done for detection of parasites, pus and red blood cells. Then thick smears were made out of the stool specimens, left to dry in air and fixed thermally in addition to methanol in hydrochloric acid. The fixed smears were stained with Safranine and counterstained with Methylene blue. The stained smears were examined microscopically for *Cryptosporidium* species oocysts (fig).

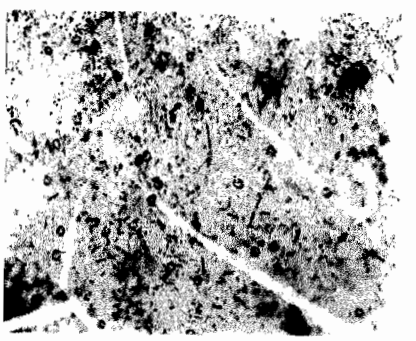

Fig. *Cryptosporidium oocysts*

The positive stools were cultured in Mac Conkey agar and Thiosulphate Citrate Bile salt Sucrose agar (TCBS) for enteric bacteria and *Vibrio cholerae* respectively [8, 9].

Results

Cryptosporidium species oocysts were found in the stools of 11 out of 72 patients (seven males, four females). Cultures of stool did not grow neither both enteric bacteria nor *Vibrio cholerae* (Table). Seven of these patients were below five years of age, one 16 years and the rest were below 20years.

These 11 patients presented with acute diarrhea that was watery, smelly and of large volume. It was associated with mild fever, abdominal pain and vomiting. They gave history of using public water source supply, which were water ponds used for both humans and animals.

Table: The pathogens in the stool of patients with non-bloody diarrhea

	Cryptosporidium	*Salmonella*	*Giardia lamblia*	Not identified
Male N=39	7	6	7	19
Female N=33	4	7	5	17

Both humans and animals used to wade into the water. All these patients were clustered to the same locality and used to drink from the same water supply. Moreover, they gave a history that about ten days before the onset of the disease, some moving nomadic cattle with diarrhoea had drunken from those ponds for two days. The patients recovered clinically and their stools became spontaneously negative for *Cryptosporidium* oocysts after a mean of 8.4 days.

In this study Cryptosporidiosis was found in 15.3 % of patients presenting with non- bloody diarrhoea.

Discussion

Our results are consistent with earlier reports by Adam et al.[3] and goes with data from South Africa[10]. However, it contradicts Simwa et al. findings in Kenya[11]. Hassan, KM et al reported *Cryptosporidium* oocysts in stools of 7.8% children with diarrhoea in Wad Medani Teaching Hospital[12]. These studies indicate that cryptosporidiosis is a common diarrhoeal disease in children.

In this study, the infection was associated with animals, and the water was the most likely vehicle of transport. The cattle with diarrhoea were the most probable source of the parasites. Children were mostly at risks (eight out of eleven). This might be explained by the relatively low immunity of children. Cryptosporidiosis is not only a disease of the immunosuppressed and children but it can affect normal people with sound immunity. The importance of examination of children stools with non-bloody diarrhoea has to be considered before embarking on giving antimicrobial drugs.

Cryptosporidiosis can appear as sporadic as well as an epidemic as in this study. The main resort of prevention is the improvement of environmental and personal hygiene[2].

Conclusion

Cryptosporidiosis is a common cause of non-bloody diarrhoea in Sudanese children. The positive cases would have been missed if the reliance of diagnosis is only on stool wet preparations and cultures.

The stains used for detection of Cryptosporidium oocysts such as Safranine/Methylene blue and modified Ziehl Neelsen are sensitive, simple and not expensive. Epidemic non-bloody diarrhoea as well as childhood diarrhoea has to be examined for Cryptosporidium oocysts with such stains.

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