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Cryptosporidiosis for Children in Egypt: Parasitological and Clinico-Epidemiological Features

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Abstract

During the period from August 1989 to Decemher 1991 stool samples from 3.216 children (aged from 2 weeks to 10 years) with acute and persistent diarrhea at Abou El Rish Hospital, Cairo University were tested for enteropathogens. The stool specimens were screened by modified Ziehl-Nielsen staining technique, direct wet mount and concentration by the method of Ritchie (formol-ether sedimentation) for presence of cryptosporidium and other intestinal parasites. Cryptosporidium infection was found in 9.2% (296 children). Cryptosporidium was the third most commonly detected enteric pathogen over all after E.histolytica (identified in 14.3%) and G. lamblia (identified in 9.4%). In the group of acute diarrhea (2.769 children) Cryptosporidium was identified in 8% (225 children). While in the group of persistent diarrhea (420 children) it is identified in 16.9% (71 children). 42.7% of these cases were identified in August, 22.9% in July, 18.2% in September, 6.8% in June, 6.2% in October and 3.1% in December. It is noteworthy that 90% of the children who excreted the Cryptosporidium oocyts were exclusively bottle-fed.

Introduction

CRYPTOSPORIDIUM is now one of the three most commonly found enteropathogens causing diarrhea illness in humans worldwide [1]. It was first noted as human infection through the occurrence of overwhelming watery diarrhea in an immunosuppressed patient [2]. The oocyt repre-

sents the infective stage and spreads by the fecal-oral route [3]. Recently Cryptosporidium is a cause of chronic diarrhea and may lead to proximal small intestinal mucosal enteropathy in children without immune dificiency [4].

Patients and Methods

Our study included 3.216 children, their age ranged from two weeks to 10 years. They were classified into two groups; group 1) included 2.796 children with acute diarrhea and group 2) consisted of 420 children with persistent diarrhea (more than 14 days).

All were subjected to the following:

1. History and clinical examination.
2. Stool sampling.

The stool specimens were screened by direct fresh mount formolether concentration method and modified Ziehl-Neilsen technique [5].

This work was conducted during the period from August 1989 to December 1991 in Abou El Rish Hospital, Cairo University.

Results

Total prevalence of instestinal parasitoses was as high as 34.3% Cryptosporidium infection was found in 9.2%. Cryptosporidium was the third most commonly detected pathogen after E. histolytica (14.3%) and Giardia Lamblia (9.4%). Table (1).

Cryptosporidium was identified in the stool of 225 children (8%) in the first group (acute diarrhea) and 71 children (16.9%) in the second group (persistent diarrhea) (Table 2).

As shown in table (3), the highest incidence of Cryptosporidiosis is shown in August and July.

90% of the positive cases for Cryptospiridiosis are bottle fed. 50% of these cases (296 children) from rural areas.

19.3% (57 children) of the positive cases excreting Cryptosporidium in the stool had severe diarrhea (more than 10 motions/day).

Epidemiolgical studies have shown a significant association with animal contact in 27.3% (81 children).

Table 1: Enteropathogens Detected in all Cases

Enteroparasite	No.	%
Entamoeba histolytica	461	14.3
Giardia Lamblia	302	9.41
Cryptosporidium	296	9.2
Entameba coli	41	1.3
Total	1100	34.3

Table 2: Cryptosporidium in Chronic Diarrhea.

	+ ve cases for cryptosp.	%
First gp. (2.796 children)	225	8
Second gp. (420 children)	71	16.9

Table 3: Cryptosporidium : Seasonal Variation.

Month	+ ve cases of Cryptosp.	
August	82	42.7
July	44	22.9
September	35	18.2
June	13	6.8
October	12	6.2
December	6	3.1

Discussion

The total prevalence of instestinal parasitosis in our study was 34.3%. Entameba histolytica (14.3%) was the most frequently encountered enteroparasite followed by Giardia Lamblia (9.4%) and Cryptosporidium (9.2%). This was in accordance with Delfin et al [6] in Cuba who had the total prevalence of parasitosis 24.5%. In their study also Cryptosporidium (8%) came after G. Lamblia (10%).

In our study, Cryptosporidium was deteced in the stool of 225 children (out of 2.796) with acute diarrhea (8%), which could be considered a high percentage as that shown among Ethiopian children with acute diarrhea (9%) as reported by Hassan et al in 1991 [8].

In contrast to the lower percentage detected in other countries: India (4.3%) [9], Germany (1.46%) [10], China (5.06%) [11] and Moscow (3.65%) [12].

On the other hand Cryptosporidium was identified in 71 children (16.9%) of persistant diarrhea (out of 420 chidem).

Cryptosporidium is recently described by Phillips et al [4] as an important cause of chronic diarrhea.

The incidence is higher in warm climate (August: 42.7%) and July (22.9%) than in October (6.2%) and December (3.1%). The same finding was concluded by Schuster et al [10]. 80% of the positive cases for Cryptosporidiosis were under the age of 2 years. It is noteworthy that 90% of the children who excreted Cryptosporidium were exclusively bottle fed with no considerable difference among their distribution between urban and rural areas.

Conclusion :

The young age and the young artificial feeding are among the precipitating factors contributing to Crypotosporidiosis.

Cryptosporidiosis may be presented with severe acute diarrhea with frequent motions which may need hospitalization.

In Egypt, Cryptosporidiosis is an important enteroparasite not only in acute but also in persistant diarrhea.

Cryptosporidiosis in man is generally assumed to be due to one species-Cryptosporidium parvum. Molecular genetic and immunologic studies have shown both similarities and differences between isolates of Cryptosporidium; including 13 differences between animal and human isolates [13].

In our work strain varition in C. Parvum was little studied, so the frequency of zoonotic transmission is unknown. Awad El Karim and Colleagues [14] results do not provide evidence that human Cryptosporidiosis is a zoonosis, neither do they refuse that possibility.

To clarify matters, we are proposing to study faecal samples from cases associated with zoonotic and non-zoonotic exposure by isoenzyme typing to identify markers to differentiate isolates of C. parvum from different hosts.

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