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Prevalence study on enteric protozoans responsible for diarrhoea in patients attending Local Health Centres in Maiduguri, Nigeria

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ABSTRACT: Protozoan causes of diarrhoea in children of ages between 1–12 years attending Local Health Centers (LHC^s) in Maiduguri was determined using the formol –ether concentration, between July – December, 2003. Of the 150 stool samples examined 108 (72.0%) were infected with *Giardia lamblia*, 81 (75.0%); *Entamoeba histolytica*, 19 (17.6%) and *Balantidium coli*, 8 (7.4%) ($p < 0.05$). Among the ages grouped as ≤ 6 years and > 6 yrs the infection rates were 59 (71.9%) and 49 (72.1%) respectively ($p > 0.05$). Children that were ≤ 6 years had prevalence of infections with *G. lamblia*, as 45 (76.3%), *E. histolytica*, 12 (20.3%) and *B. coli*, 2 (3.4%) ($p < 0.05$) while those at > 6 years had *G. lamblia*, 36 (73.5%); *E. histolytica*, 7 (14.3%) and *B. coli*, 6 (12.3%) ($p < 0.05$). Male children were more infected 61 (75.0%) with *G. lamblia*, 43 (70.5%); *E. histolytica*, 11 (18.0%) and *B. coli*, 7 (11.5%), compared to female children with 47 (68.1%) comprising of *G. lamblia*, 38 (80.9); *E. histolytica*, 8 (17.0%) and *B. coli*, 1 (2.1%) ($p < 0.05$). Regarding the monthly distribution of infection, all the three parasitic species occurred all through the period of study with higher prevalence for *G. lamblia* and lowest for *B. coli*.

Key Words: Enteric protozoa, Diarrhoea, Children, Local Health Centers, Maiduguri, Nigeria.

Introduction

Enteric protozoans are unicellular microorganism with *Giardia lamblia*, *Entamoeba histolytica* and *Balantidium coli* as commonest mostly in the younger age groups, associated with acute diarrhoea and duodenal irritation (Albonica *et al*, 1991). These enteric protozoans are widely encountered in tropical areas where they could be described as endemic, with the recorded parasitism responsible for 80 % of mild diarrhoea, 35 % of persistent diarrhoea, and 15 % of dysentery in children worldwide, that gives rise to enormous and grave pathological effects (Fabiya 1983). The main modes of transmission include faecally contaminated water, food borne and person to person especially with poor basic hygiene or lack of sanitation (Onubugu, 1978). Only few reports have been made on the prevalence of gastro intestinal parasites of humans in Maiduguri (Biu and Harry, 2001; Biu and Adam, 2004; Biu and Rebecca, 2004),

hence this study was attempted to provide an improved data on the enteric protozoan fauna among children attending local health centers (LHC^S) within Maiduguri Metropolis.

Materials and Methods

Stool sample collection: A total of 150 stool samples of suspected diarrhoeic patients attending local health centers (LHC^S) in Maiduguri metropolis were collected into universal stool bottles, preserved in 2 % formalin and taken to the parasitology laboratory, Faculty of Veterinary Medicine for examination.

Stool sample examination and identification of protozoans: Each specimen was examined using the formol –ether concentration technique as described by Fleck and Moody, (1988). 1 gram of stool was emulsified in 7 ml of 10 % formalin in a centrifuge tube, strained with a wire mesh sieve and the filtrate obtained into a test tube to which was added 3 ml of ether and mixed using applicator stick for 15 seconds. The mixture was then transferred to a clean centrifuge tube and centrifuged at 3000rpm for 1 minute. The fatty plug and debris formed at the top were loosened using applicator stick and tube quickly inverted to discard the supernatant allowing only a few drops of the deposit, which was transferred into a clean glass slide under a cover slip and observed at x 10 objective of the light microscope to identify the protozoan parasites using the keys of Soulsby (1982). Lugols iodine was also added to the deposit to confirm diagnosis as outlined by Obiamiwe and Nmorsi, (1991).

Results

Table 1 shows the prevalence of enteric protozoan infections inpatients attending local health centers (LHC^S) in Maiduguri. Out of the 150 patients examined, 108 (72.0%) were positive with 81 (75.0%) having *Giardia lamblia*, while 19 (17.6%) and 8 (7.4%) had *Entamoeba coli* and *Balantidium coli* respectively ($p < 0.05$). Distribution of infection among age groups indicate that patients ≤ 6 years had a prevalence of 59 (71.9%) comprising of 45 (76.3%) for *G. lamblia*, 12 (20.3%), for *E. histolytica*, and 2(3.4%) for *B. coli*, while patients >6 yrs had a prevalence of 49 (72.1%) comprising of 36 (73.5%) for *G. lamblia*, 7 (14.3%) for *E. histolytica*, and 6 (12.3%) for *B. coli*. Male patients showed a prevalence of 61 (75.0%) comprising of 43 (70.5%) for *G. lamblia*, 1 (18.0%) for *E. histolytica*, 7 (11.5%) for *B. coli*, while females had a prevalence of 47 (68.1%) with 38 (80.9%) for *G. lamblia*, 8 (17.0%) for *E. histolytica*, and 1 (2.%) for *B. coli*. The prevalence of infection based on the 6 months of study also showed that infection was generally high with *G. lamblia* as most prevalent while only few cases of *B. coli* were recorded.

Discussion

This study on enteric protozoans causing human diarrhoea has revealed a very high prevalence of 72.0% among patients attending local health centers (LHC^S) in Maiduguri, which agrees with the reports by Fashuyi (1983); Awogun, (1984); and Montresor *et al.*, (1998) that the high prevalence is closely related to poverty, poor personal and environmental hygiene and impoverished health services, and that enteric protozoan infections are endemic in Nigeria (Biu and Harry, 2001; Biu and Adam, 2004; Adeyeba and Akinlabi, 2002; Mbanugo and Abazie, 2002; Mbanugo and Onyebuchi, 2002; Biu and Rebecca, 2004).

This study did not observe any difference between prevalence values among gender or age variables, which is contrary to the findings by Chandler and Read, (1961); Jakubowski, and Hoff, (1979); Fabiyi (1991) and Awogun (1984); Adeyeba and Akinlabi, (2002), that incidence is more in paediatric age groups and reaches its highest in young adults, but may be related to the factors of poverty, poor hygiene and inadequate health services. In conclusion promotion of better environmental conditions with serious emphasis on health education and personal hygiene especially eating and defaecating habits will enhance the prospects for the control of enteric faeco-oral diseases in Nigeria.

Table 1: Prevalence of enteric protozoan infections in patients attending Local Healyh Centres (LCH's) in Maiduguri.

	No of patients Examined	No of patients infected	No(%) infected with:-		
			<i>Giardia lamblia</i>	<i>Entamoeba histolytica</i>	<i>Balantidium coli</i>
All patients	150	108(72.0)	81(75.0)	19(17.6)	8(7.4)
Age (years):					
≤6	82	59(71.9)	45(76.3)	12(20.3)	2(3.4)
>6	68	49(72.1)	36(73.5)	7(14.3)	6(12.3)
Sex:					
Male	81	61(75.0)	43(70.5)	11(18.0)	7(11.5)
Female	69	47(68.1)	38(80.9)	8(17.0)	1(2.1)
Months of study					
July	48	37(77.1)	24(64.9)	9(24.3)	4(10.8)
Aug.	54	33(61.1)	26(78.8)	5(15.2)	2(6.1)
Sept.	24	19(79.2)	15(78.9)	2(10.5)	2(10.5)
Oct.	8	7(87.5)	6(85.7)	1(16.7)	0(0.0)
Nov.	8	6(75.0)	5(83.3)	1(20.0)	0(0.0)
Dec.	8	6(75.0)	5(83.3)	1(20.0)	0(0.0)

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