PREVALENCE OF INTESTINAL PARASITES AMONG PATIENTS PRESENTING GASTROINTESTINAL SYMPTOMS AT LAGOS UNIVERSITY TEACHING HOSPITAL (LUTH)

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ABSTRACT

This study determined the prevalence of intestinal parasitic infections in patients with diarrhoea and other gastrointestinal infections at the Lagos University Teaching Hospital (LUTH). Out of the 409 patients examined, 193(47.2%) were infected. Infection rate was higher in males 104 (52.5%) than in females 89 (42.2%). The highest prevalence rate was found in age group (21-30) years, with 38 (60.3%) infected and the lowest rate was recorded in age group (61-70) years, with 6(33.3%) positive. Entamoeba histolytica and Ascaris ranked highest among the various groups most especially age group (21-30) years, with 21(36.2%) and age group (11-20) years with 19(32.8%). Giardia lamblia had the highest prevalence among the age group (1-10) years with 10(50.5%) positive. However, only one (1) patient was positive for Cryptosporidium infection. Mixed infection was mainly found between E. histolytica and Ascaris (14.8%). There was a statistically significant difference X^2 = (P = 0. 05) between the infected and uninfected patients. The study highlights the significance of formal - ether concentration techniques (FEC) and the use of Ziehil-Nelsen Carbol – Fuschin on routine examination of stool samples to improve diagnosis.

Key words: Prevalence, Intestinal parasites, diarrhoea, Entamoeba, Ascaris, Giardia, Cryptosporidium,

INTRODUCTION

Helminthic and protozoa infections have been major human infection mostly in tropical countries over the years, Leonor et al (2000). These range from amoebae, Ascaris lumbricoides, Trichuris trichuria, Taenia solium etc as well as the Coccidian parasites which are often opportunistic agents. It is well recognized that the high prevalence of helminthic and protozoal diseases are closely related to environmental and socio-economic factors (Crompton, 1989 and Lynch et. al., 1992) and that these factors are more prevalent in children than adults (Haswell – Elkings et. al., 1989).

It was estimated that at least 4-5 million young children die annually from diarrhoea in Asia, Africa and Latin America (Synder and Merson, 1982), and apart from bacterial, and viral pathogens various parasitic agents have been associated with persistent diarrhoea in young children (Fang et. al., 1995 ; Brown et. al., 2003).

Presently, there is paucity of reports on the level of prevalence and incidence of parasitic infections in Nigeria, and therefore the paper highlights the prevalence rate of infection considering the serious environmental sanitation problems facing most urban cities, especially Lagos, Nigeria.

MATERIALS AND METHODS

Stool samples were collected in sterile bottles from patients attending various clinics at the Lagos University Teaching Hospital, Lagos. The stool samples were examined immediately and those not examined were preserved in 10% formalin. Briefly, 1-2g of freshly passed stool was emulsified in 7ml of 10% percent normal saline. A portion of the emulsion was stained, and the remaining was filtered using a 40mm mesh gauze, 3ml of diethylther was added and vigorously shaken and centrifuged at 2000 rpm for 2 minutes.

After centrifugation, the supernatant was decanted, leaving few drops of the sediment: Smears were made from thoroughly mixed sediments on clean glass slides and examined for the presence of parasites under x10 and x40

objectives of the microscope. Where the sediment was sufficient, up to three slides were examined to improve diagnosis of pathogens. Formalin – preserved stool samples and modified Ziehl – Neelsen Carbon – fuchsin staining of formol – ether concentration (FEC) were used for the recovery and identification of Cryptosporidium parvum oocysts. After identification of Cryptosporidum oocyst by light microscopy, confirmation was made by examination in an oil immersion objective (Garcia and Bruckner, 1997)

RESULTS

Out of the total 409 stool samples collected and examined, watery stool was 187 (45.7%), followed by soft formed stool 78(19.1%) and the least was watery bloody stool 6(1.5%) The macroscopic examination of various stools gives a presumptive diagnosis as shown in Table 1. Table 2 shows the prevalence rate of intestinal parasites according to sex of the patients of the 198 males, 104 (52.5%) were positive and of the 211 females, 89 (42.2%) were positive. Overall prevalence of infection was 47.2%. High rate of infection was predominant among the age group (21-30) years with 38 (60.3%), followed by the age group (1-10) years, 52 (48.2%), and the lowest rate of infection was recorded in age group (61-70) years, 6(33.3%) as shown in Table 3.

Prevalence of various intestinal parasites according to age groups is shown in Table 4. Giardia lamblia had the highest percent positive rate of 10(50.5%), closely followed by T. trichuria eggs 22(44.9%). Ascaris lumbricoides eggs was more prevalent in age group (11-20) years with 19(32.8%) positive. Hookworm infection had a low prevalence and the highest rate of infection was in the age group(21-30) years with 4(571%) infected. E. histolytica infection was more predominant in age group (21-30) years and (1-10) years with 21(36.2%) and 12(20.7%) respectively when compared with those of E. coli. Only 1 (100%) was positive for Crytosporidium infection in the age group 41-50 years. Figure 1 shows the distribution of intestinal parasites among the different age groups.

Mixed infection was common between *E. histolytica* and *Ascaris lumbricodes* infection, with overall infection rate of 14.8%. *E. histolytica* and *T. trichuria* had the least mixed infection.

TABLE 1: Distribution of various stools examined

Type	Watery Stool	Water Bloody Stool	Formed Stool	Watery Mucoid Stool	Soil Forinal Stoll	Unformed stool
No &amined	187	6	39	39	78	60
%	45.70	1.50	9.50	9.50	19.10	14.70

Table 2: Prevalence of Intestinal Parasites According to Sex

Sex	Numbers of patients examined	No. of infected patients	Positive %	Negative %
Male	198	104	52.5	47.5
Female	211	89	42.2	57.8
	409	193	47.2	

Table 3: Prevalence of intestinal parasites among the various age groups

Age groups	No. of patient examined	No. of infected patient	% positive
1-10	108	52	48.2
11-20	88	41	46.6
21-30	63	38	60.3
31-40	49	23	46.9
41-50	54	24	44.4
51-60	29	29	31.0
61-70	18	06	33.3
	409	193	47.2

Table 4: Distribution of various parasitic agents among varying age groups

Age group	T. trichuria positive (%)	*Ascaris* positive (%)	Hookworm positive (%)	*E. histolytica* positive (%)	*Giardia lamblia* positive (%)	*E. coli* positive (%)	*Cryptosporidium* oocyst (%)
1-10	22 (44.9)	16 (27.6)	2 (28.6)	12 (20.7)	10 (50.5)	10 (17.5)	ND
11-20	16 (32.7)	19 (32.8)	1 (14.3)	7 (12.1)	4 (20.0%)	16 (28.1)	ND
21-30	5 (10.2)	12 (20.7)	4 (57.1)	21 (36.2)	3 (15.0)	13 (22.8)	ND
31-40	2 (4.1)	3 (5.2)	ND	2 (3.4)	ND	3 (5.3)	ND
41-50	3 (6.1)	4 (6.9)	ND	7 (12.1)	1 (5.0)	8 (14.0)	1 (100)
51-60	1 (2.0)	3 (5.2)	ND	3 (5.2)	2 (10.0)	6 (10.5)	ND
61-70	ND	1 (1.7)	ND	6 (10.3)	ND	1 (1.8)	ND
	49	58	7	58	20	57	1

DISCUSSION

Protozoan and helminthic infections are important causes of gastrointestinal diseases in most developing and underdeveloped countries of the world. In Nigeria, there is paucity of report on the prevalence and incidence of almost all-parasitic infection.

In the present study, patients who complained of diarrhoea, and dysentery were examined for various parasitic infections. The infection in male was higher than in females. This does not correlate with those of Akinboye et. al, (2001),where the results showed that infection rate in females, 77 (86.5%)was higher than that of males, 12 (13.5%), this was attributed to lack of hygiene. In this report, the prevalence could not be associated with environmental contamination of food by faeces or through certain vectors associated with the transmission of these pathogenic organism as reported by Oduntan et. al., (1973). There is likelihood that in an urban city like Lagos where there is unsanitary and inadequate method of disposal of refuse, contamination of food and water with faecal matter may play a major role in the epidemiology of such parasitic infections.

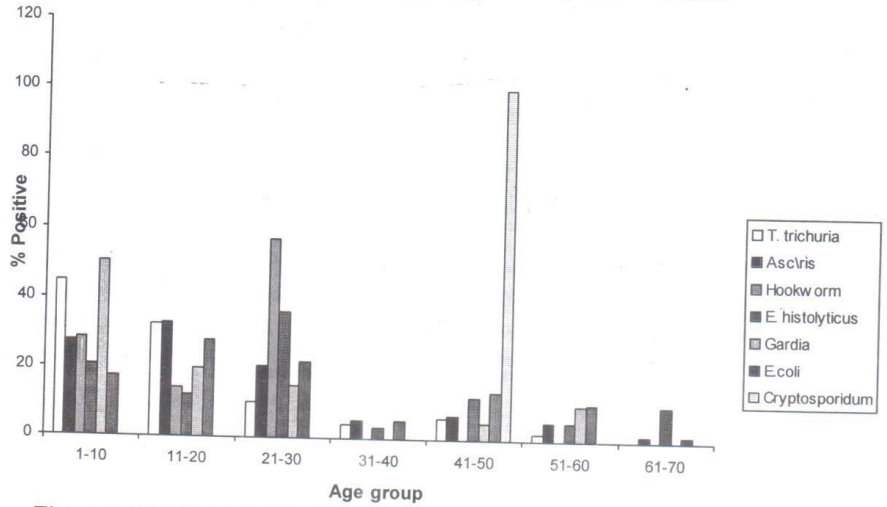

Figure 1: Distribution of various parasitic agents among varying age group

Adenusi (1997) reported the distribution of Necator americanus and Ancylostoma duodenale among school children in Lagos, Nigeria. He reported high prevalence of hookworm infection (72.0%) and Ascaris (4.5%) but the present finding is in contrast with this result where *Ascaris* and *E. histolytica* infections were found to be more prevalent.

As expected, stool samples examined through (FEC) technique detected more parasitic agents than by direct smear. This was also emphasized by Brown et, al., (2003) who used various diagnostic techniques for detection of intestinal helminthes. One advantage of the concentration technique over direct smear is that, it improves detection of eggs and cysts readily from faecal debris. Most diagnosis in hospital laboratories are through wet mount.

Several reports have suggested that children are more susceptible to C. parvum infection (Current and Garcia, 1991, Adegbola et. al., 1994, and Menon, 1999); but only one patient was positive for Cryptosporidium in this study. This is not consistent with other reports in which children are at high risk of infection but, there is need for further studies on Cryptosporidium infection in both immunocompetent and immunocompromised patients.

In conclusion, the high rate of parasitic infection among age group (1-10) years, (11-20) years and (21-30) years may be due to low level of hygiene, inadequate health education, low economic status and method of

sewage disposal, resulting in contamination of the environment. Further studies are needed to give of adequate data on the prevalence and incidence rate of infection and to improve on detection of eggs and cysts in stool samples in various hospital laboratories.

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