IJBHS 2009119/5403

Prevalence of giardiasis among out-patients of the University of Maiduguri Teaching Hospital, Nigeria

A. A. Biu*[1], I. Bintu[1] and E. T. Agbadu[2]

[1]Department of Veterinary Microbiology and Parasitology, Faculty of Veterinary Medicine, P. O. Box 8136, University of Maiduguri, Maiduguri, Nigeria
[2]Department of Parasitology, P. O. Box 269, Vom, Plateau State, Nigeria

ABSTRACT: A six- month prevalence study on *Giardia* parasites among patients that attended the University of Maiduguri Teaching Hospital was conducted using the formol-ether concentration method. Of the 256 patients examined, 85 (33.2%) haboured *Giardia* species, representing 39 (30.5%) and 46 (35.9%) for males and females, respectively (n = 128 each) (p>0.05). Ages between 2-25 years examined had a prevalence of 42 (22.2%), while those older than 25 years had a prevalence of 43(64.2%) (p<0.05). Of the 156 diarrhoeic patients examined, 64 (41.0%) were positive, while out of the 100 non-diarrhoeic patients, 21 (21.0%) were infected (p<0.05). The even spread of infection among patients throughout the period of study could be described as endemic in Maiduguri. This study is aimed at assessing the prevalence of giardiasis in Maiduguri with a view towards enhancing prospects for its control. The significance of these findings is further discussed.

Keywords: Prevalence, Human giardiasis, Gastro-intestinal parasites; Maiduguri, Nigeria.

Introduction

Gastro-intestinal parasitism has been reported to be caused by a great number of helminths and protozoans, which are either specific parasites of man or are zoonotic, affecting both man and animals (Fabiyi, 1991; Biu and Harry, 2001; Biu and Adam, 2004; Biu and Rebecca, 2004). Helminthosis especially giardiasis are usually associated with contaminated water supplies, poor personal hygiene, ignorance and poverty; and the availability of mechanical vectors, such as houseflies (Oyerinde, 1976; Ogbe, *et al.,* 2002), causing diarrhea with over 3 million deaths annually mostly in children (WHO 1990; Biu and Adam, 2004).Adeyeba and Akinlabi (2002) reported a prevalence of 2.0% among school children in Oyo State, Nigeria while Mbanugo and Onyebuchi (2002) reported a nprevalence of 0.19% in Ezinifite community in Anambra State, Nigeria, and despite the fact that Biu and Harry (2001) earlier reported a prevalence of 5.5% in school children in Maiduguri, there is still dearth of information on giardiasis among this study population, thus this study was designed to provide additional base-line prevalence index with a view to improving means of control and prevention.

---

*To whom correspondence should be addressed.
E-mail: biuvet@yahoo.com

Materials and Methods

Study area: Maiduguri, a city in the northeastern part of Nigeria, lies within latitude 11.15^oN and longitude 30.05^oE the Sudano-Sahelian Savanna zone, with a dense population that are crop farmers, fishermen, herdsmen and traders (Udo, 1978).

Data collection: Stool specimens from 256 patients comprising of 128 each of male and female; aged between 2-25years (189) and above 25years (67) were obtained using specimen bottles labeled with personal data on the sex and age of patients that attended the University of Maiduguri Teaching Hospital, University of Maiduguri Clinic, and the General Hospital Maiduguri. Also the stool consistency based on whether formed, semi- formed, unformed or liquid was noted as diarrhoeic or non- diarrhoeic.

The formol- ether concentration method as described by Obiaminwe and Nmorsi (1991) and Biu and Adam (2004) was used to examine the stool specimen collected. one gram of each stool specimen was emulsified in 7 ml of 10 % buffered formalin into a swing- out head centrifuge(Measuring and Experiment Ltd UK) tube. The mixture was strained using a wire sieve and the filtrate poured into a test tube to which 3 ml of ether was added and well mixed for 5 seconds. The formol emulsion suspension was put back into a centrifuge tube and centrifuged at 1,500g for 1 minute. The fatty plug was then loosened using an applicator stick and the tube quickly inverted, discarding the supernatant, allowing a few drops of the deposit to remain which was well mixed and a drop of it made on a clean glass slide covered under a cover slip and examined at x 40 objective of the light microscope. A drop of Lugols iodine was added to aid in diagnosis by enhancing the clarity of the cysts if any (Biu and Adam 2004).

Statistical analysis: The various data obtained were analyzed using the Students- paired t –test, and data with "p" values equal to or less than 0.05 regarded as significant (Compell,1986).

Results

Table 1 shows the monthly distribution pattern for giardiasis in patients examined at Maiduguri. An even spread of infection was noticed, indicating that the disease could be endemic in the area of study.
Table 2 shows a prevalence of 85 (33.2%) for giardiasis among 256 patients that were examined in this study. Male patients had 39 (30.5%) and females had 46 (35.9%) (p> 0.05) prevalence rates, respectively. Ages between 2-25 years had a significantly lower(p<0.05) prevalence of 42 (22.2%) compared to those older than 25 years with 43 (64.2%) .Patients with diarrhoeic stool consistency also had a significantly higher (p<0.05) prevalence of 64(41.0%) when compared to non- diarrhoeic patients with prevalence of 21.0%.

Table 1: Monthly distribution pattern for giardiasis in the patients examined at Maiduguri.

Months of study	No of patients examined (n= 256)	No. (%) infected
Jan.	52	14 (26.9)
Feb.	20	5 (25.0)
Mar.	62	29 (46.8)
April.	30	15 (50.0)
May	42	10 (23.8)
Jun.	50	12 (24.0)

Table 2: Prevalence of giardiasis based on the sex, age, and stool consistency of the patients examined at Maiduguri.

Patients	Total no. examined	No. (%) infected
Overall	256	85 (33.2)
Sex:		
Male	128	39 (30.5) $p > 0.05$
Females	128	46 (35.9)
Age (years):		
2-25	189	42 (22.2) $p < 0.05$
>25	67	43 (64.2)
Stool consistency:		
Diarrhoeic	156	64 (41.0) $p < 0.05$
Non diarrhoeic	100	21 (21.0)

Discussion

The prevalence of 33.2% observed for giardiasis in this study can be described as fairly high compared with the reports by Adeyeba and Akinlabi (2002) of a 2.0% prevalence among school children in Oyo State, Nigeria; Mbanugo and Onyebuchi (2002) of a 0.19% prevalence in Ezinifite community in Anambra State, Nigeria, while Biu and Harry (2001) had earlier reported a 5.5% prevalence in school children in Maiduguri the study area. This result might have been as a result of cystic contamination of water and food supplies as previously observed by Fabiyi (1991) and Biu and Adam (2004).

In this study more females were infected than the males although no statistically significant difference ($p > 0.05$) was observed between them. WHO (1996) has observed that differences in prevalence of giardiasis between male and female could be as a result of the socio- economic disposition of the population, especially the culinary role of women and the disease pattern which is generally influenced by poor handling of drinking water, food or sewage. The finding of a significantly higher infection rate ($p < 0.05$) in ages of people older than 25 years compared to those whose ages were less than 25 years agrees with the reports by Chandler and Read (1961) who found that incidence of giardiasis increases during childhood and usually reaches its highest in young adults. Also the finding of a higher infection in diarrhoeic patients in this study is supported by the reports by WHO (1990) and Biu and Adam (2004) that a major symptom of the disease is diarrhoea. The monthly distribution pattern for giardiasis in patients in this study indicated an even spread under which the condition can be stated as endemic. This conforms to the reports by Fabiyi (1991), that in the tropics the disease is non seasonal, but dictated by the factor of poor hygiene leading to food and water contamination.

Suggestions should focus on the factors that propagate giardiasis such as socio- economic disposition of the study population with the aim of identifying targets for control enhancement.

In conclusion, strict personal hygienic practices, fundamentally the safe disposal of excreta plays a significant role in the epidemiology and control of giardiasis.

References

Adeyaba, O.A. and Akinlabi, A.M. (2002). Intestinal parasitic infections among school children in a rural community of southwest Nigeria. Nigerian Journal of Parasitology. 23:11-18

Biu, A. A. and Harry. J. (2001). Gastro- intestinal parasitism: A review study among school children in Maiduguri, Nigeria. Biosciences Research Communications 13 (6): 609 –613.

Biu, A. A. and Adam, F. A. (2004). Protozoan causes of human diarrhoea: An investigation amongst in patients attending the State Specialist Hospital, Maiduguri, an arid zone of Northern *Nigeria. Research Journal of Science*. 10 (1 & 2): 19-21.

Biu, A. A. and Rebecca, M. K. (2004). Amoebiasis: A prevalence study amongst patients attending University of Maiduguri Clinic. *Research Journal of Science* 10 (1 & 2): 73-75.

Chandler, A. C. and Read, C.P. (1961). *Introduction to Parasitology.* 10th ed John Wiley and Sons Inc. New York. 227 –296pp.

Compell, R. C. (1986). *Statistics for Biologists*. Cambridge University Press, Cambridge. 86-90pp.

Fabiyi, J.P. (1991). Review of intestinal parasites in Nigeria. *Journal of Medicine Today on Parasitic Diseases* 2: 28-30.

Mbanugo, J.I. and Onyebuchi, C.J.(2002). Prevalence of intestinal parasites in Ezinifite community, Aguata local government area of Anambra State, Nigeria. *Nigerian Journal of Parasitology.* 23:27-34.

Obiamiwe, B. A. and Nmorsi, P. (1991). Human gastro intestinal parasites in Bendel State, Nigeria. *Agnew Parasitol*. 32: 17-183.

Ogbe, M.G., Edet, E. E. and Isichei, M. N. (2002). Intestinal helminth infection in primary school children in areas of operation of shell petroleum development company (SPDC) of Nigeria, western division in Delta State. *Nigerian Journal of Parasitology* 23:3-10.

Oyerinde, O. (1976). The role of houseflies in dissemination of hookworms. *Annals Trop. Med. Parasitol.* 70:455-462.

World Health Organization (1990). *Informal consultation on parasitic infections* WHO/CDS/IPI. 90, 1. Geneve, WHO.

World Health Organization (1996). *The world health report on fighting disease, fostering development*. WHO/CDS/IPI. 98, 3. Geneve, WHO.

Udo, R.K. (1978). *A comprehensive geography of West Africa.* 1st ed. Heinemann Educational Books Nig. Ltd. 304 pp.