



THE PREVALENCE OF HEAMOPARASITIC INFECTION AMONG HUMANS IN ABAKALIKI, EBONYI STATE, NIGERIA

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ABSTRACT

The study was carried out to determine the prevalence of heamoparasitic infection among humans in Abakaliki Metropolis. Out of 300 patients examined, 224 (74.6%) were parasitized for *plasmodium falciparum* giving a prevalence of 72.2% and 76.4% for male and female respectively. The analysis revealed that the highest prevalence of *plasmodium falciparum* was recorded among children under 0-11 years of age when compared to other age bracket. The Chi-square test showed that age is a significant difference in *Plasmodium Falciparum* infection rather than sex. Only one patient was positive for *Trypanosome* giving a prevalence of 0.33% among patients sampled. Two patients were positive with the microfilaria of *Loa loa* giving a prevalence of 0.67% with male & female having similar rate. However, there is need for mass education of the public and public enlightenment on the causes of transmission and control of these infections in other to minimize the rate of occurrence.

Keywords: Prevalence, Heamoparasites, Protozoa, Microfilaria, Infection, Pathogenic.

INTRODUCTION

There are several species of protozoan and helminthes parasites known to parasitize human blood and often harmful. Members of these parasites can infect gastrointestinal tract through food and water intake, through a transmitting agent such as mosquito, through sexual conduct and via the nose and skin. The haemoparasitic diseases are responsible for various forms of morbidity and mortality in different regions of the world. These parasites multiply in the blood and other tissues of the mammalian host where they survive and reproduce in the body often for long period of time (Godman and Landon, 1978). The prevalence of some haemoparasitic infections has been studied by many researchers in different regions of the world with malaria ranking high (Mahajan *et al*, 2005). Since the infection is related with poor sanitary conditions and unhygienic standard of living which is pronounced among people sampled, malaria also seems more prevalent here like in the Mediterranean, Europe, Holland and more endemic in USSR, North America, Middle East, the Caribbean, Australia and Taiwan. Malaria alone is estimated to kill between 1.5-2.7 people annually (Clarkson, and Alessandro, 1984). However, parasitic infections as recorded in this area showed that the environment is characterized with sparse vegetation, dry forest and bushy surrounding with temperate season may encourage the occurrence of these parasites. Those implicated includes plasmodium, trypanosomes, and the microfilariae of *loa loa*. These also occurs in many countries of world mainly especially in the tropical and subtropical regions of Africa but extending into some of the temperate areas (WHO, 1989). Among these parasites, plasmodium is the most prevalent in Nigeria as reported by Ukaejiofor, (1990) that 20% of deaths in children under the age of two were recorded in Nigerian hospitals. It is also stated that trypanosomes as firstly found in Africa as reported in this study is because the environment is decimated with slow and fast running water bodies which helps in their life cycle (Richard and Wagman, 1997). Diagnosis of this parasite follows the same pattern since there are confirmed by detection of the parasites in thick and thin blood smear or other tissue fluids. Other major tropical diseases are caused by a variety of organisms, including viruses, protozoa and worms, which are transmitted by insect bites, while some are transmitted through contact with contaminated food and water (Nadira *et al*, 1998). The scope of this research unveils the problem associated with the presence of these parasites like malaria, *Trypanosomiasis*, *Loiasis* and *Filariasis*. The development of drug resistant strains of malaria, the emergence of insecticide resistant mosquitoes; war and civil unrest leading to the collapse of control programmes have all contributed to the present problems. The presence of the blood parasites in man is responsible for various pathogenic signs associated with the disease such as fever, headache, chills, oedema.

Aims and Objectives

To identify the various blood parasites in people living in Abakaliki Metropolis.

To determine the intensity at which each of the parasitic diseases exists.

MATERIALS AND METHODS

STUDY AREA

The study was conducted in Abakaliki Local Government Area Abakaliki, Ebonyi State. The climate is characterized by a hot dry period, which stretches from Nov-April, with the period of rainy season from May–October. The maximum temperature during the dry season is 37.6°C while the minimum temperature is 27.1°C. The period of rainy season has a maximum temperature of 32.9°C and a minimum temperature of 24.1°C and a rainfall range of 33 – 6mm to 34.7mm. The environmental condition and the vegetation type have favoured the breeding of mosquitoes and vectors of other diseases.

SAMPLE COLLECTION

Blood specimens were collected from patients of different age groups and sex who visit Ebonyi State University teaching hospital (EBSUTH) between March to May 2006. The patients were bled between 9am and 3pm when the microfilaria was likely to be seen. The blood specimens were examined for plasmodium, trypanosome, and the microfilaria of loa loa, using thick blood films and direct wet mount by Ukaejiofor, (1990).

THICK BLOOD FILM

This method was used for detection of plasmodium and other microfilariae Ukaejiofor, (1990) finger prick blood of patient was prepared in paired thick films on microscope slides. These films were stained in fresh Geimsa stain using standard WHO procedure (Olawaju, 1994).

The stained films were examined under microscope for malaria parasites using high power objectives. Critical searches were made at the edges and tail of the films for microfilariae. Thick films were also examined for loa loa and trypanosome parasites but the method is not sensitive enough for routine diagnosis.

WET PREPARATION

This technique was also used by Ukaejiofor, (1990) and Cheesbrough, (1987) for the detection of microfilaria loa loa and trypanosomes. Two to three drops of capillary blood was placed on a clean slide and mixed with normal saline, and viewed under covered slide with objective x10 of the microscope.

VENOUS BLOOD TUBE CONCENTRATION

This procedure was used for the detection of microfilaria (Ukaejiofor, 1990). The lysed blood was spun for 10 minutes at about 1pm. The supernatant fluid was discarded and the sediments transferred into a slide with cover slip, and viewed under x10 objectives for motile microfilaria.

RESULTS

The parasitological examination of 300 patients at EBSUTH was conducted for the prevalence of hemoparasites. The parasites identified were *plasmodium Falciparum*, *Trypanosoma cruzi* and the microfilariae of Loa-loa. The plasmodium seen was either the gametocyte or ring forms of the parasites.

Table 1: Shows the prevalence of *plasmodium Falciparum* by Age and Sex in Abakaliki metropolis.

Age (yrs)	MALE		FEMALE		Total (+ve)	Total (%)
	No Examined	No +ve (%)	No Examined	No +ve(%)		
0-11	49	44 (89.80)	52	49 (94.23)	93 (92.08)	
12-21	25	20 (80.00)	31	23(74.19)	43(76.79)	
22-31	19	11(57.89)	41	31(75.61)	42(70.00)	
32-41	8	5(62.50)	27	15(55.56)	20(57.14)	
42-51	13	6(46.15)	12	9(75.00)	15(60.00)	
52-61	7	3(42.86)	6	4.(66.67)	7(53.85)	
62 & above	5	2(40.00)	5	2(40.00)	4 (40.00)	
Total	126	91(72.22)	174	133(76.44)	224 (74.67)	

Out of 300 patients examined, 126 are males and 174 are female, a total of 224 were positive for malaria parasite *plasmodium falciparum*, comprising 91 males and 133 females, the overall prevalence rate was found to be 74.67% while male & female had the infection rates of 72.22% and 76.44% as shown in Table:1 above

Table 2: Shows the prevalence of *Trypanosoma cruzi* by Age and Sex in Abakaliki Metropolis.

Age (yrs)	MALE		FEMALE		Total +ve(%)
	No Examined	No +ve(%)	No Examined	No +ve(%)	
0-11	49	0	52	0	0
12-21	25	0	31	0	0
22-31	19	0	41	0	0
32-41	8	0	27	0	0
42-51	13	0	12	0	0
52-61	7	1(14.29)	6	0	1(7.70)
62 & above	5	0	5	0	0
Total	126	1(0.79)	0	0	1 (0.33)

Out of 300 patients examined for the prevalence of *Trypanosome cruzi* only one patient was identified positive for *Trypanosoma of Glossina* species. The overall prevalence rate was 0.33% with male having similar infection rates of 0.79% as shown in the Table 2 above.

Table 3: Shows the prevalence of Loiasis by Age and Sex in Abakaliki Metropolis.

Age (yrs)	MALE		FEMALE		Total +ve(%)
	No Examined	No +ve (%)	No Examined	No +ve(%)	
0-11	49	0	52	0	0
12-21	25	0	31	0	0
22-31	19	0	41	0	0
32-41	8	0	27	0	0
42-51	13	0	12	0	0
52-61	7	0	6	1 (16.67)	1(7.69)
62 & above	5	1 (20.00)	5	0	1 (10.00)
Total	126	1(0.79)	174	1(0.57)	2 (0.67)

Out of 300 patients examined for the prevalence of Loa – Loa (loiasis) only two patients was observed with the microfilariae of *Loa loa*. The overall prevalence rate was 0.67% with male and female having similar infection rates of 0.79% and 0.57% respectively as shown in Table above.

DISCUSSION

The result of the study showed a relatively high prevalence of malaria in Abakaliki metropolis when compared with other parasites. This is because malaria been transmitted by mosquito has various mode of transmission to other parasites which have one or more that is restricted but found to be prevalent in young children under the age of 2years.This agrees with Richard and Wagman, (1997), Bruce-Chwatt, (1998) which states that children with low immune level suffers malaria than adult. This also agrees with (WHO, 1998) who observed that malaria recorded high prevalence in a study conducted in different villages and rural areas in Nigeria with more prevalence recorded in school children. It was also observed that more refuse were generated which are not properly disposed, pockets of standing water which constitutes suitable breeding sites for *Anopheles* specie which are vectors of *plasmodium falciparum*, also this town is surrounded by fairly densely shaded vegetative areas, which could serve as breeding sites for *Chrysop* species, and *Glossina* species which are the transmitting vectors for trypanosome and loa loa were predominantly irregular. The 92.8% prevalence recorded for *plasmodium Falciparum* among children of lower age stands the highest when compared with other age brackets. This could be attributed to the facts that children engage in several activities that promote man vector contacts such as playing around breeding places of the vector, it could also be due to their naturally low immunity. While the low prevalence among the high age brackets may be due to chemosuppressive use of anti malarial drugs or the development of immunological competence from the result, it could be suggested that Loa-loa and Trypanosome are not so endemic in Abakaliki.

A prevalence of 0.67% was recorded with male and female almost equally infected respectively. It was observed that infected patients showed no clinical manifestation. It could be concluded that Loiasis is rare or totally absent in this area.

Among the specimens examined there was no positive results obtained for leishmania. This agrees with Ukoli (1984) who stated that in nature, *Glossina* species are refractive to infection with only 1 to 2 per 1000 being infected. It could also be suggested that *Glossina* species and *Phlebotomus* species which are vectors of *Trypanosoma* and *Leishmania* respectively are rare in the study area. This agrees with Ochola *et al.*, (2005) and Wijers (1974), which states that their environment were characterized with sparse but dried vegetation which had affected their breeding sites and this might have necessitated low infection among people.

CONCLUSION

From the survey, it could be concluded that malaria parasite is the most prominent haemoparasites in Abakaliki with higher prevalence in male than in female. As regards to age, the chi-square analysis showed that age is important to infection in that, younger people had higher prevalence than adults. There was insignificant prevalence of Loiasis and Trypanosomes.

Mass education of the public or public enlightenment on the cause, transmission and control of these diseases is necessary. Destruction of mosquito breeding sites by cutting down bushes around houses and avoidance of growing crops and flowers in compounds. Use of insecticide treated nets, use of insect repellants, and biological control agents through the introduction of organisms to feed on mosquito larva and finally the use of drugs for the treatment of infected patients.

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