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Prevalence of malaria parasite among blood donors in Lagos University teaching hospital, Lagos Nigeria

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ABSTRACT

The prevalence of malaria parasite was carried out among voluntary blood donors at Lagos University Teaching Hospital (LUTH) Idi-Araba, Lagos. A total of 200 blood samples were examined for parasite using an improved method for microscopic diagnosis of malaria parasite. 56(28%) samples were positive for Plasmodium falciparum, with highest prevalence among the male donors (26.5%) and the blood group O (43.2%). However, there was no significant difference in malaria parasite in relation to the sex and the blood groups (p>0.05). The results therefore indicate that there is relatively high prevalence of malaria parasite among the blood donors and this calls for the attention of the authority concern that blood donors should also be screened for malaria parasite before such bloods are transfused to avert its consequences on the recipients.

Keywords: malaria, prevalence, blood donors, blood group, Nigeria.

INTRODUCTION

The administration of blood to a patient is potentially a life saving procedure and the demand for blood has greatly increased over the years. The prevalence of parasitic infection especially haemoparasites is a serious case which needs to be addressed, some diseases resulting from these parasites during transfusion including trypanosomiasis, filariasis, bacteria and viruses (1). Haemoparasites constitute a serious threat to the human race due to the fatality (2,3).

Transmission of malaria by blood transfusion is a significant problem in the disease endemic regions of the world (4). Hung *et al.* (5) suggested that the presence of *Plasmodium falciparum* in blood may lead to fatalities when the blood are transfused especially into children under 5 years, pregnant women, accidental blood loss in accident victims, and immuno-suppressive patients (4).

The first case of transfusion malaria was reported in 1911, since then increasing number of cases have been reported world -wide (6). Globally, malaria remains one of the most common transfusion transmitted infection and it have serious consequences, especially with *P. falcipanum* which may prove rapidly fatal (7).

Malaria is the most wide spread and most important single disease entity of the tropics with its morbidity and mortality at unacceptably high levels in the region. It is estimated that the population at risk is about 2.6 billion with 100 million clinical cases, (8) and about one million fatalities per year (9). Most of the malaria cases in the world (about 90%) occur in Africa (10).

The Federal Ministry of Health reported that Malaria accounts for 25% of infant mortality and 30% of children mortality with the report that the desease is also responsible for 10% of Nigeria's hospital cases and commonest caus e of out- patient attendance (11,12),it is therefore necessary in a country like Nigeria where malaria is endemic to lay importance in the need to screen every donor through proper laboratory tests to alleviate the chances of post transfusion malaria.

Since the National institute of Health (NIH) consensus conference in 1995 requires that every donor blood should be screened for various infections including HIV, Hepatitis B and C, malaria and syphilis (13) and absent of a suitable test yet available for screening malaria in the donors, the present study was carried out to bridge the gap in determining the prevalence of malaria parasitaemia among blood donors and therefore establishing the possible risk of transmission of malaria parasite to recipients of blood and how save our blood banks are operating.

MATERIALS AND METHODS

Study site

A cross sectional study was carried out in Lagos University Teaching Hospital (LUTH), Idi-Araba, Lagos State, Nigeria among two hundred randomly selected blood donors at the hospital's blood bank between May-July 2009.

Blood collection

2 mls of venous blood samples were collected into an Ethylene diamine tetra acetic acid (EDTA) containing bottles for the study, using vein puncture technique of (14,15).

Blood examination

Laboratory analysis was carried out by determining the blood group of the donors and using direct smear of Kinde-Gazard et al, (16) for thick blood films prepared according to the technique out lined by Cheesbrough(17) and examined microscopically for malaria parasites under the microscope.

RESULTS

The prevalence of malaria parasite among blood donors at the study site is presented in table 1. Of the two hundred blood screened (192 males and 8 females), 56 (28%) blood were positive for *P. falciparum* which comprises 53 (26.5%) males and 3 (1.5%) females. However, the difference in prevalence of malaria in both sexes was not statistically significant ($p>0.05$). Participants within age group 20-30 had the highest prevalence of malaria while the least was recorded in age group age 18-19 (Table 2). However, the difference in malaria prevalence was not significant ($p>0.05$). Though, there was variation in malaria prevalence in blood groups screen with the

highest prevalence in blood group O and the lowest in blood group AB, the difference in malaria prevalence was not statistically significant (Figure 1) ($p>0.05$).

Table 1 : Prevalence of malaria parasite in relation to the sex

Sex	**No Examined**	**No. Infected**	**% Infected**
Male	192	53	26.5%
Female	8	3	1.5%
Total	200	56	28.0%

Table 2: Prevalence of parasite in relation to age groups

Age – group	**No Examined**	**No. Infected**	**% Infected**
18-19	15	2	3.57
20-30	95	28	50
31-40	55	18	32.14
41-50	25	4	7.14
51-60	10	4	7.14
Total	200	56	100

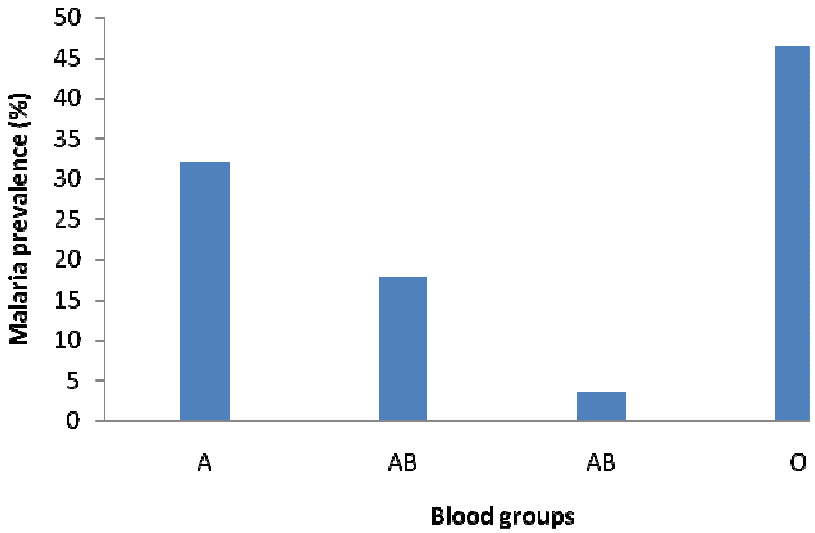

Figure 1: Prevalence of malaria parasite in relation to the blood group

DISCUSSION AND CONCLUSION

The results obtained in the present study showed the relatively high prevalence of malaria infection among the blood donors at the study site. This could be a reflection of the high rate of asymptomatic malaria parasitaemia in endemic malaria regions. This observation is similar to the report of Achidi et al, (18). The implication of this with regard to blood transfusion is enormous and this shows that blood transfusions carry the risk of transmitting malaria parasite to the recipients. The majority of the blood recipients, pregnant mothers and children are actually people who are highly vulnerable to malaria. (19). The transmission of malaria by blood transfusion is a serious risk as the diagnosis of malaria infection is not listed among the tests to satisfy the blood safe for transfusion (16). Though there was variation in malaria prevalence among the age groups and sex, the proportion of the number screened for each age group and sex could have accounted for this. The low number of females observed in the present study is a

surprise as females are naturally and culturally inhibited for commercial blood donation due to the loss of blood during monthly menstruation.

The non-significant variation in malaria parasite in relation to the blood groups may suggest that the blood groups are not associated with malaria transmission. The high prevalence among blood group O may be associated to the proportion sampled as the group was the dominant blood group type encountered during the study.

In conclusion, the present study showed that there is high prevalence of malaria parasite among the blood donors at the study site during the course of the study. Therefore, there is risk of malaria parasite being transmitted to recipients during blood transfusion. Considering the danger involve in immune-compromised recipients such as children under ages less than five years and pregnant women, there is urgent need for the inclusion of malaria screening in satisfying a blood safe for transfusion.

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