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Full Length Research Paper

A study of the prevalence of malaria in pregnant women living in a suburb of Lagos, Nigeria

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Maternal mortality is twice in pregnant women with malaria. This study was intended at assessing the occurrence of malaria among pregnant women living in Lagos Nigeria, which is distinguished by unstable transmission of malaria. 50 pregnant women attending the antenatal Maternity clinic were enlisted for this study. This study was carried out for 5 months (period of high malaria transmission). The result showed that malaria infection was rampant during pregnancy. A total of 26 (52%) of the pregnant women were positive to and showed symptoms of malaria while 24 (48%) were negative and showed no symptoms of malaria. Primigravidae were more susceptible to the parasite especially *Plasmodium falciparum* with mean parasite density of 2112.50 ± 420.90 (parasite/ l) than the multigravidas with parasite density 446.70 ± 296.90 (parasite/ l). The results showed the prevalence of malaria infection especially *P. falciparum* infection in pregnant women living in the area and that the younger women were more at risk. although transmission is unstable but high as a result of topography, attitude, rainfall, poor drainage system and high human-vector contact to mention a few. Malaria should therefore be recognized as a global main concern in health care.

Key words: Malaria, pregnancy, occurrence, disease, parasite.

INTRODUCTION

Malaria remains the single most important infection causing morbidity and mortality in the world and is second only to Mycobacterium tuberculosis as the single most important infection agent (Greenwood, 1997a). It is one of the biggest impediments to progress in Africa and is the biggest killer in Africa, with 90% of the global malaria deaths occurring in this continent (Bulter, 1997). It is responsible for one in four deaths below the age of 5 years and could most times lead to miscarriage at the early stage of pregnancy (Bulter, 1997) . In the endemic countries of Africa, children under the age of five and pregnant women bear the brunt of the burden of malaria disease, this is because they have lower immunity to the disease compared to other people in the same environment.

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(Raimi et al., 2004; Molyneux et al., 1989). In certain locations, the malaria situation is deteriorating as a result of environmental changes, including global warming, civil disturbances, increasing travel and increasing drug resistance (Greenwood, 1997a). According to World Health Organization report, malaria ranks 7th in the rank of leading selected causes of mortality with fatality rate put at 1.5 to 2.7 million annually while it comes second among the leading selected causes of morbidity with about 300 to 500 million people reporting to hospital due to the infection (WHO, 1997b).

Maternal mortality is twice in pregnant malaria women than among non-pregnant patients with severe malaria (Brain, 1998). Anaemia is the most common symptom of malaria in pregnancy and usually develops during the second trimester (Brain, 1998). Cerebral malaria is rare in adults except during pregnancy and is responsible for many maternal malaria deaths (Macleod, 1998).

stern *falciparum* malaria may cause deformities in the genital tract to make conception impossible or if conception does occur it may prevent normal implantation and development of the placenta (Burrow and Ferris, 1988).

Although so much work have been published on the prevalence of malaria in major cities of Nigeria but little information is available about the prevalence of this disease in the suburbs or outskirts of major cities where although transmission is unstable but high as a result of topography, attitude, rainfall, poor drainage system and high human-vector contact to mention a few. This work was therefore aimed at assessing the prevalence of malaria in pregnant women living in a suburb of Lagos, Lagos Nigeria.

MATERIALS AND METHODS

Data collection

A total of 50 pregnant women attending the antenatal clinic of the Saint Anthony Hospital in Ojo, were recruited after their consent has been sought. Questionnaires were then administered requesting information on age, parity and gestational age. Gestational age was calculated from the last menstrual period and confirmed by ultrasound scan and physical examination was conducted for symptoms of malaria.

Collection of blood and blood smear

2.0 ml of blood was collection from an ante-cubital vein of each woman. A minute quantity of blood obtained with the syringe was placed on a clean grease free slide that has been labeled. Thick films were prepared and the films were left to dry.

Discoloration / microscopy procedure

The dried slides were stained using 12% field stain A and B. The slides were examined under an x100 oil immersion objective of the light microscope. The thick film was used for detection and counting of the malaria parasite density.

Parasite concentration determination

Parasiteamia was measured by counting the number of the asexual parasite against the number of the leucocytes in the thick blood film. The numbers of asexual parasites were counted against 200 leukocytes. The parasite density was calculated by dividing the number of parasite by the number of leukocytes and multiplied by 6000, assuming each woman has 6000 leucocytes/ l.

RESULTS AND DISCUSSION

In this study, out of the 50 pregnant women, 52% were positive to and show symptoms of malaria while 48% were negative (Table 1). 84.6% of the infection was found to be due to *Plasmodium falciparum* while *Plasmodium malariae* was 15.4% of the women. Pregnant women within the age group of 20 to 30 years had the highest number of parasite density while those above 40 years had the least (Table 2). Primigravidae were found to be susceptible more to malaria with parasite density of 2112.50 ± 420.90 parasites/ l (Table 3). Women in their second trimester of pregnancy were found to have the highest parasite load (Table 4).

Table 1. Age distribution of pregnant women positive to malaria and those without malaria.

Age group (year)	Positive (%)	Negative (%)
20 - 30	16 (32)	14 (28)
31 - 40	10 (20)	9 (18)
Above 40	-	1 (2)
Total	26 (52)	24 (48)

Data as number (%).

This study revealed a malaria prevalence of 52% in pregnant women living in this part of Lagos. Pregnant women within the age bracket of 20 to 30 years recorded the highest number of positive result while those of the age group of above 40 years recorded the lowest or no result at all (Table 2). This result supports the existing knowledge that high prevalence at lower ages and low prevalence at higher ages is due to the existence of natural immunity to infectious disease including malaria (Oduola et al., 1992; Rogerson et al., 2000; Bouyou-Akotet et al., 2003) which the pregnant women acquires as the age increases. Lander et al. (2002) however reported no significant association between malaria infection and maternal age (Lander et al., 2002).

An analysis of malaria in pregnancy in Africa revealed that parasiteamia is significantly common and heavier in primigravidae than multigravidae (McGregor, 1984). This study showed high level of infection in primigravidae (Table 3). This is because in an area where transmission is high and the level of acquired pregnancy immunity against malaria is expected to be significant, primigravidae is more affected (Brain, 1998; McGregor, 1984). Women in the second trimester had the highest level of parasiteamia (Table 4), which is line with other studies where the highest level of parasiteamia was recorded at the second and early third trimester (Menendez, 1995; Nosten et al., 1991).

Conclusions

The main epidemiological factor to *P. falciparum* infection in pregnancy should be considered in relation to the endemic malaria conditions under which women are living. Pregnancy is also one of the factors affecting the rate of malaria parasite infection in women living in malaria endemic communities. Malaria should therefore be recognized as a global priority in health care more so

Table 2. Mean ± SEM malaria parasite density in relation to age of pregnant women.

Age group (year)	Positive sample	Mean parasite density ± SEM (parasites/ l)
20 - 30	16	937 ± 331.50
31 - 40	10	166.80 ± 539.40
Above 40	-	-

SEM: Standard error of mean.

Table 3. Mean ± SEM malaria parasite density in relation to gravidity of pregnancy.

Gravidity	Number	Positive sample	Mean parasite density ± SEM (parasites/ l)
Primigravidae	18	12 (66.67%)	2112.50 ± 420.90
Multigravidae	32	14 (43.75%)	446.70 ± 296.90

SEM; Standard error of mean. Data as number or number (%) as appropriate.

Table 4. Mean ± SEM malaria parasite density in relation to trimesters of pregnancy.

Trimester	Number	Positive sample	Mean parasite density ± SEM (parasites/ l)
First	14	10 (71.43 %)	885.60 ± 364.10
Second	20	11 (55 %)	1913 ± 554.70
Third	16	5 (31.25 %)	577.40 ± 320.60

SEM; Standard error of mean. Data as number or number (%) as appropriate.

in pregnancy.

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