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Short Communication

Malaria parasitaemia among pregnant women with multiple child birth attending ante-natal clinics in parts of Idah and Igalamela/Odolu Local Government Areas of Kogi State, Nigeria

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The prevalence of malaria parasitaemia/ anaemia among pregnant women with multiple child birth were determined during two malaria transmission seasons in rural Idah and Igalamela-Odolu Local Government Areas of Kogi State. In each survey questionnaires were administered on previous number of child births and gestational age, while presence or absence of malaria parasitaemia was determined. A total of 797 pregnant women were enrolled in five (5) major clinics attended by pregnant women. A total of 384 (48.2%) had microscopic parasitaemia. There were more positive cases among primigravidae and the results showed a significant difference ($P < 0.05$) between the primigravidae and multigravidae, but showed no significant difference ($P > 0.05$) between the number of child births. More women were infected between the age ranges of 16–25.

Key words: Malaria, pregnant, parasitamia, gravidae, gestation age.

INTRODUCTION

Malarial infection during pregnancy is a major public health problem in tropical and sub-tropical regions throughout the world. Africa bears 90% of the global malarial burden (RBM 2005). *Plasmodium falciparum* infection during pregnancy increases the chances of maternal anaemia, abortion, still birth, prematurity, intrauterine growth retardation and infant low birth weight.

In Nigeria, malaria contributes greatly to the increase in hospital attendance across the geo-political zones. Malaria infections during pregnancy have adverse effects on both mother and their fetus, which could include maternal anaemia, premature delivery and low birth weight. These maternal and fetal complications differ somewhat with the type of malaria transmission area. In high transmission areas, women have low immunity to malaria that wanes somewhat in pregnancy, while in low transmission areas women have developed immunity to malaria (Feiko, 2005).

Salihu et al. (2003) reported that the effectiveness of chloroquine prophylaxis in reducing the frequency of malaria-induced anaemia is high, despite the widespread reports that *P. falciparum* has resistance to chloroquine. On the Africa continent, malaria chemo-suppression with the drug was found beneficial in reducing the risk of anaemia at delivery among Cameroonian women (Bonnet et al., 2002).

Falciparum malaria affects more pregnant women especially primigravidae (Saute et al., 2002), but clear parity pattern of malaria and anaemia was not observed; however, a more cost effective malarial control approach in this area should be aimed at, in all pregnant women regardless of their parity. In a study by Nuwaha (2001) in Mbarara Municipality, Uganda, it was discovered that 55% of the households are bed net users with the strongest predictors of bed net users living in a permanent house and agreeing that bed nets are worth their cost.

The prevention of HIV disease progression and vertical transmission, improved nutritional status and better management of malaria and intestinal parasitic infections are likely to reduce the incidence of low birth weight (Dreyfuss et al., 2001). In areas with moderate malaria transmission, women of all parities have substantially increased risk of child low birth weight and severe ane-

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Table 1. Number and percentage of positive parasitaemia based on age.

Age range	Number positive to parasitaemia	Percentage positive to parasitaemia
10 - 15	1	0.1
16 - 20	82	10.3
21 - 25	109	13.7
26 - 30	142	17.8
31 - 35	30	3.8
36 - 40	18	2.3
41 - 45	2	0.3

P > 0.005 (ANOVA).

mia as a result of malarial infection in pregnancy. The risk of low birth weight is likely to be particularly high in areas with a high prevalence of severe anemia (Shulman et al., 2001). Increased gravidity and subsequent infections with multiple strains will effectively boost immune mechanism against more and more strains. The multiplicity of infections in pregnant women may be an important factor for the acquisition and maintenance of immunity against malaria (Beck et al., 2001).

Maternal pyrimethamine prophylaxis did not appear to protect babies from parasitisation and there was no demonstrable beneficial effect on the babies' birth weight (Olowu et al., 2001). Antibodies produced in pregnancy in response to placental infection, the early onset of efficient antibodies in multigravidea and the delayed production of antibodies in primigravidae appear to account for the dependent differential susceptibilities of pregnant women in placental malaria (Oneil et al., 2001). The aim of this present work is to study the prevalence and the distribution of malaria parasitaemia among pregnant women in Idah and Igalamela-Odolu Local Government Areas of Kogi State, Nigeria.

MATERIALS AND METHODS

The prevalence and possible risk factors for malaria were investigated in 797 pregnant women attending the antenatal clinics in five (5) health centers in Idah and Igalamela-Odolu Local Government Areas of Kogi State, Nigeria, in two malaria seasons (2005 - 2006). The health centers were General Hospital, Idah; General Hospital, Ajaka; Adijat Clinic and Maternity Homes, Idah; Ojochogwu Clinic, Idah; and The Federal Polytechnic Medical Health Center, Idah.

Blood samples were taken for malaria parasitaemia and anaemia. The pregnant women were examined based on their various trimesters, age and number of pregnancies. Thick and thin blood films were prepared from capillary blood stained with Giemsa stain and observed under low power objective. Parasite densities were determined by counting the number of parasites from the various fields and slides were double checked blindly. All samples were collected and examined within the various hospitals/clinics laboratories over two-malaria seasons in 2005/2006.

RESULTS AND DICUSSION

A total of 384 (48%) of the pregnant women were confirmed positive for malaria parasites. Table 2 shows the distribution of pregnant women among the different age groups. There were more cases between the ages of 16 - 30. However, no relationship was established between malaria prevalence and age of pregnant mothers ($p > 0.05$).

This hospital based study, showed a high prevalence of malaria infection, 384 (48.1%) and both malaria parasiteamia and anaemia were frequent during the rainy seasons. Among the multigravidae, the malaria incidence is higher among those in their second pregnancy 47 (12.2%) and within the age range 26 - 30. The malaria incidence shows a steady decline with further child birth. Primigravidae showed the highest incidence of malaria of 51 (13.3%). Similar results were obtained by Van-Eijk et al. (2001), who confirmed that first trimester is the main risk period (Table 1), although it had been reported that age did not show any relationship with the spread of malaria ($P > 0.005$) (Pearson, 2001). The results obtained in this present study showed that pregnant women between the age of 16 - 30 were most vulnerable (9.4% - 13%) (Table 2).

The statistics showed no significant relationship between economic class and malaria incidence. The higher prevalence of malaria among primigravidae in their first trimesters could be attributed to inexperience in the area of antenatal care, exposure to mosquito bite, non usage of insecticides treated net etc. Increased gravidity and subsequent infections with multiple strains, will improve immune mechanism against more and more strains. This agrees with the findings of Beck et al. (2001) in Ghana as reasons why infections are less in multigravidae.

P. falciparum infection in pregnancy increases the chances of maternal anaemia, abortion, still birth, prematurity, intrauterine growth retardation and infant low birth weight, which is the greatest single risk factor for death in first month of life (Das, 2000). Malaria has been estimated to cause 8 - 14% of all low birth weight babies and 3 - 8% of all infant deaths in areas of Africa with stable malaria transmission (RBM, 2005).

In terms of its effect on mothers, severe anaemia increases the risk for maternal mortality and malarial anaemia is estimated to cause as many as 10000 maternal deaths each year in Africa. Providing rapid diagnosis

Table 2. Age distribution and number of positive parasitaemia in various number of pregnancies.

Age range	Primigravidae	Multigravidae						
	1st	2nd	3rd	4th	5th	6th	7th	8th
10 - 15	1(03%)	-	-	-	-	-	-	-
16 - 20	51 (13.3%)	22(5.4%)	9/2.5%)	3 (0.8%)	-	-	-	-
21 - 25	41(10.7%)	39(10.2%)	18(4.7%)	06(1.6%)	03(0.8%)	-	-	-
26 - 30	15(3.9%)	47(12.2%)	25 (6.6%)	30(7.8%)	18(4.7%)	6(1.6%)	-	-
31 - 35	1(0.3%)	4(1.0%)	5(1.3%)	11(2.9%)	3(0.8%)	6(1.6%)	-	1(0.3%)
36 - 40	-	-	10(0.3%)	3(0.8%)	7(1.8%)	3(0.8%)	3(0.8%)	1(0.3%)
41 - 45	-	-	-	1(0.3%)	1(0.3%)	-	-	-

and treatment for pregnant women is also an important component of effective control and there are antimalarial drugs which are safe and effective for use in pregnancy (Bouyansong, 2001). However, there remain obstacles to implementing effective programmes and reaching women who will benefit the most from them, particularly high-risk adolescent women in their first pregnancy (Table 1).

Delivery of cost-effective malaria prevention to pregnant women will require increased awareness of the problem among communities most affected with malaria and integration of malaria control tools with other health programmes targeted to pregnant women and new borns. The use of insecticide treated net and chemoprophylaxis may be beneficial in these years for all women irrespective of age or parity, Education and training programmes in malaria prevention, early detection of malaria and treatment, better health care delivery systems and enlightenment on the malaria transmission will also be very helpful.

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