Research Article
Volume 5:10, 2022

Journal of Biomedical and Pharmaceutical Sciences

ISSN: 2952-8100 Open Access

Cross-sectional Study on Placental Malaria in Pregnant Women: A Study of Asaba Municipal, Delta State Nigeria

Chioma O Anorue [1*], Ogochukwu C Okeke[1] and Chinyere N Ukaga[2]

[1]*Department of Biology, Federal University, Ebonyi, Nigeria.*

[2]*Department of Animal and Environmental Biology, Imo State University, Owerri, Nigeria.*

Abstract

The prevalence of placental malaria was carried out in pregnant women living in Asaba area of Delta State.Blood samples were collected from 76 pregnant women at Federal Medical Centre Asaba, Delta State, using both thick and thin blood smears from the placenta. The overall prevalence of the placental malaria in the study population was 65.8%. Prevalence of placental malaria in study population showed primigravidae 11(52.4%), secundigravidae 9(56.3%) and multigravidae 30(76.9%). However, there was no significant relationship between prevalence of placental malaria and gravidity ($p>0.05$), there was no significant relationship ($p>0.05$) between prevalence and age, the prevalence increased with increasing age group. There was also no relationship between anaemia and age of the study population.Results from this study showed high prevalence of placental malaria in all gravidae due to the fact that Asaba municipal is surrounded by river Niger. Acquire or accumulated immunity from no child birth or multiple childbirths did not stop them from being infected with malaria. Recommendations include the use of IPTs, ITNs, vaccine introduction and good health education.

Keywords: Placental malaria • Intermittent preventive treatment • Insecticide treated nets

Introduction

Malaria refers to the disease process resulting from human infection with parasites belonging to the class sporozoa, Genus plasmodium. Although several species exist, four are the focus of this discussion because they are the primary ones of human clinical significance *viz Plasmodium vivax*, *Plasmodium ovale*, *Plasmodium malariae* and *Plasmodium falciparum*. Transmission of this parasite to man is through the bite of an infected female Anopheles mosquito, the vector when it takes a blood meal (W.H.O.2001). However, there is transmission by blood transfusion or through the use of contaminated needles by abusers [1]. Symptoms are fever, moderate or high parasitaemia, semi-immune and therefore risk of severe disease not very high, except in pregnant women. Seek parasitological confirmation of diagnosis where possible. Malaria caused by Plasmodium falciparum is a major health problem in many parts of the world, especially in the tropics and sub-tropics. Over 90% of the 200 million estimated malaria infected people in the world are in Africa (WHO, 2003).

Individuals who successfully survive P. falciparum malaria episodes in childhood develop natural immunity against the parasite and by adolescence they are more or less protected from severe malaria illness. Many research studies have shown that malaria in pregnant has caused a lot of harm to the mother and the unborn child. The primigravidae pregnant mothers are the most affected according studies. Furthermore, placental malaria reduces the birth-weight of the neonate, causes abortion, premature birth, miscarriage and stillbirth.

However, women, despite the presence of acquired protective immunity are likely to develop severe anaemia and clinical diseases. Malaria in pregnancy is an obstetric social and medical problem requiring multi-disciplinary and multidimensional measures. Pregnant women constitute the main adult risk group and 80% of deaths due malaria in Africa occur in pregnant women as well as children, below 5 years of age. In Nigeria, prenatal mortality due to malaria is about 1500/day. This is what brought about the aim of study on determining the prevalence of placental malaria in pregnant women in Asaba municipal of delta state Nigeria [2].

***Address to Correspondence:** Chioma O Anorue, Department of Biology, Federal University, Ebonyi, Nigeria; Tel: +2348037759108; E-mail: chummyogo@gmail.com*

Date of submission: 16 August, 2021, Manuscript No. JBPS-22-002; **Editor assigned:** 19 August, 2021, PreQC No. P-002; **Reviewed:** 02 September, 2022, QC No. Q-002; **Revised:** 02 September, 2022, Manuscript No. R-002; **Published:** 31 October, 2022, DOI: 10.37421/ 2952-8100.2022.5.001.

Materials and Methods

Sample size

Sample size was gotten using sample size formula. Through the questionnaire, random sampling of the pregnant women who attended antenatal in the Federal Medical Centre (FMC) Asaba was carried out [3 and 4].

Figure 1. The map showing asaba municipal in delta state.

Ethical clearance

This was gotten from the ethical committee review board of the Federal medical Centre (FMC) Asaba. The consent of the pregnant women was also gotten before the work. The research was performed according to the rules and regulations of Ministry of Health Asaba, Delta State.

Sample collection

Nabumetone samples of placental blood were collected after delivery. A 5ml sample of placental blood was extracted by health officials and dropped into Ethylene Diamine Tetracetic Acid, (EDTA) anticoagulant bottles. The samples were sent to the laboratory for examination. Thick and thin films stained with Giemsa stain were examined under a microscope with a 100x objective lens to identify malaria parasites. Samples were classified into malaria positive (+) or negative (-). Parasitaemia was expressed as the number of parasites per microscope field and graded as low (<1000/ul), moderate (<1000-9,900/ul) and severe (>10,000/ul). The Packed Cell Volume (PCV) was determined using standard methods. A woman was considered to be anaemic if the PCV Is less than 30%. Thick and thin blood films were both used in the examination of blood for malaria parasite. Both were made on separate slides for convenience. Slides with frosted ends were used to facilitate labeling [5 and 6]. The thick blood film was used to know the parasite density while the thin film was used to identify the different species.To ensure good staining, reproducibility, and standardization of reporting, the amount of blood used in making the thick blood film was kept as constant as possible and evenly spread over a specific area.

Results

A total of 76 pregnant women with normal delivery were used for this study, 21(27.63%) were primigravidae, 16(21.05%) were secundigravidae and 39(51.31%) were multigravidae woman. The primigravidae were within the age range 18-23 years, Secundigravidae 24-29years, while multigravids 30-35years Tables 1-5. More multigravidae (51.31%) were involved in this study than primigravidae (27.63%) and secundigravidae (21.05%). Out of the 76 women examined, a total of 50 (65.8%) women had placental malaria.

Table 1. The study population gravidity and age group.

Population	Total Examined	Age group
Primigravidae	21(27.63%)	18-23yrs
Secundigravidae	16(27.63%)	24-29yrs
Multigravidae	39(51.31%)	30-35yrs

Out of the 76 women examined, a total of 50(65.8%) women had placental malaria.

Table 2. The prevalence of placental malaria.

No. Examined	No. with Placental Malaria	No. without Placental
76	50(65.8%)	26

Table 3. The prevalence of placental malaria within the gravidity of the study population.

Population	No. examined	%Placental malaria
Primigravidae	21(27.63%)	11(52.4%)
Secundigravidae	16(21.05%)	9(56.3%)
Multigravidae	39(51.31%)	30(76.9%)
Total	76	50 (65.8%)

Table 4. The relationship between age, prevalence and gravidity of the study population.

Age	Prevalence%	Population
18-23(21)	11(52.4%)	Primigravidae
24-29(16)	9(56.3%)	Secundigravidae
30-35(39)	30(76.9%)	Multigravidae
Total (76)	50(65.8%)	

Table 5. Relationship between anaemia and age of the study population..

Age	Anaemic No (%)	Non–anaemic No (%)
18-23(21)	12(57.1%)	9(42. 9%)
24-29(16)	10(62.5%)	6(37.5%)
30-35(39)	25(64.1%)	14(35.9%)

Discussion

The epidemiology of malaria in recent times has drawn a lot of concern from health and research workers. In pregnant women especially, the prevalence of placental malaria has been showing a considerably stable pattern of progression.

However, this placental malaria survey in Asaba has unique characteristics. The prevalence of placental malaria was 50(65.8%). This is an indication that pregnant women are at risk during pregnancy therefore more health education, pre antennal care and preventive strategies need to be taught to them. Many studies have found the prevalence of placental malaria to be higher in primigravidae.

In this current study, multigravidae presented more with placental malaria than other groups. In this study of the 39(51.31%) multigravidae examined, 30(76.9%) had placental malaria. This result showed that malaria infection in prevalence in Asaba municipal is high due to the surrounded by water body. Pregnant women are meant to build immunity the more they gave birth but, in this case, the multigravidae were highly infected. Majority of them were not literate. Also, they were all highly infected due to the population of mosquitoes in the area.

The multiple childbirths, incessant abortion and miscarriages, suffered by most women bring about immunosuppression of the system.The parasites adhere to the tissue, of the placenta through cyto adhesion to their body system thereby causing repulsion of the foetus.

Anaemia prevalence was also high in all women with placenta malaria despite their age or gravidity. This prevalence is identical to that reported in a group of pregnant women with malaria.

After checking all the variables, age and gravidity was determined to be a major risk factor. The strong effect of age may be due to the fact that Asaba is a city surrounded by water. Mosquitoes bite often irrespective of the season.

During the course of our study, we found out that different prophylaxis were recommended for the pregnant women.Malaria drugs like (Sulfadoxine and Pyrimethamine) were administered to them depending on the body correspondence. Majority of the multigravidae had miscarriages, gave birth to premature babies with low birth weight (1.53kg) and also experienced neonatal death.

Several etiological factors un-related to placental malaria may contribute to anaemia in pregnancy. These factors include poor nutrition, folate deficiency, iron deficiency and some underlying diseases.

However, it is still believed that development of pregnancy-associated immunity e.g. production of antibodies that inhibit the adherence of placental parasites to Chondroitin Sulphate Antigen (CSA) may be very important in women.

Conclusion

In Previous researchers kept reporting that there is high degree of placental malaria among primigravidae of ages 18 and below. However, recent investigation at the Federal Medical Center Asaba showed that women in the multigravidae group 30(76.9%) suffered more from placental malaria. What this goes to prove is that other factors like location, mosquito breeding and bite, mental status and absence of regular medical checks up contributed to high degree of infection.

Therefore, we suggest that more researchers should carry out research work on placental malaria in delta state to ascertain why the multigravids were highly infested.Most multigravidae in Delta are not educated.Most of them neglect the use of insecticide treated mosquito nets. Although malaria vaccine spf 66 is now a reality, nevertheless even in combination with other techniques and as a component of an integrated malaria control strategy, it is unlikely that spf 66 vaccine will provide the definite answer to the global problem of malaria. The task ahead therefore includes improving the vaccine, devising and testing new vaccines which may prove more effective on everyone even pregnant women.We still recommend the constant and effective use of insecticide treated mosquito nets as initiated by Roll Back Malaria(RBM). Most of these pregnant women feel the insecticide treated nets is not being comfortable. Most women are yet to know what it is. Some see the jingles on-air yet it's not within their reach. Those who knew about it could not afford them.Therefore, the Federal Ministry of Health (FMH) make provision of nets to all pregnant women. Intermittent Preventive treatment (IPT) measure is in use in hospitals but most women in Asaba municipal prefer 'agbo' a traditional medicine. Health programmes should be initiated on the side effects of traditional medicine because they have detrimental effects to maternal and child's health. Women should be taught to adopt good standard of living and avoid negligence to their antenatal checkups. Most prefer to register for antenatal at 5months or during the time of delivery.

Acknowledgement

This study is part of the Masters degree thesis of Anorue Chioma Ogochukwu. The contribution of the co-authors is gratefully acknowledged. We thank Prof Ukaga C.N. for supervising the work.

Source of support

This study was self- funded.

Authors' contributions

All authors made contributions through supervision, designing, drafting and analysis of the research work. There is no conflict of interest.

References

1. Uphof JC . Dictionary of Economic Plants, 2nd edition.*Verlag Von J Cramer* 1988.
2. Al-Saleh , FS, Ali Hamid and Mirza Mansoor. "Chemical Constituents of Some Medicinal Plants Growing in Bahrain Fitoterapia." 3(1993):256.
3. Rizq AM . "The Phytochemistry of the Flora of Qatar." UK.1986.
4. Al Sayed , Hussain and Taha A. "Brine Shrimp Bioassay of Ethanol Extracts of Sesuvium Verrucosum, Salsola Baryosma and Zygophyllum Quatarense Medicinal Plants from Bahrain. " *Phytother Res* 14: 48-50.
5. McLaughlin JL . "Brine Shrimp: A Convenient General Bioassay for Active Plants Constituents, Planta Medica." 45(2000): 31-3.
6. Lis-Balchin , Maria and Stanley G. "Bioactivity of selected plant essential oils against Listeria monocytogenes". *J Appl Bacteriol* 82(1993): 759-762.
7. Rojas , Arando,Hernandez Luis, Rogeho PM, Mata Rona. "Screening for Antimicrobial Activity of Crude Drug Extracts and Pure Natural Products from Mexican Medicinal Plants." *J Ethnopharmacol* 35(1993): 127-149
8. Magawa L, Magwa, Gundidza Mazuru, Gweru Nyasha, Humphrey Godfred "Chemical composition and biological activities of essential oil from the leaves of Sesuvium portulacastrum. " *J Ethno-Pharmacol* 103(2006): 85-89

How to cite this article: Chioma, O Anorue , Ogochukwu C Okeke and Chinyere N Ukaga . "Cross-sectional Study on Placental Malaria in Pregnant Women. A Study of Asaba Municipal, Delta State Nigeria". *J Biomed Pharm Sci* 5 (2022) :001