

A Prospective Study: On Clinical Profile and Outcome of Malaria in Pregnancy at Tertiary Care Centre in North-Western Maharashtra

Dilip R. Patil*, Naresh S. Vidhate**

Abstract

Introduction: Malaria during pregnancy is a recognised risk factor for maternal and fetal complications and it is endemic in certain areas of our country. Pregnancy also enhances the severity of malaria particularly with P falciparum infestation. Malaria in pregnancy is a complex phenomenon and malaria epidemiology is rapidly changing, additional evidence is still required to understand how best to control malaria. Material and Methods: This is a prospective observational study conducted in the department of medicine of A.C.P.M. Medical College during the period from July 2009 to Feb 2014. Twenty seven pregnant women with sub types of malaria in pregnancy were studied. The maternal complications and outcome of pregnancy was studied. Observation: A total of 27 pregnant women patients with plasmodium falciparum, vivax and mixed malaria with age group 15 to 45 years (mean 26.29) There was statistically significant increase in the incidence of anemia(mean Hb 6.4gm%), thrombocytopenia(mean platelet count 65700/cmm), mean leucocyte count 9129 and mean random blood sugar 60.7mg/dl, high grade fever, headache, jaundice, altered sensorium observed in plasmodium falciparum infection during

pregnancy. There was also increased 11.11% renal and hepatic failure, and 7.4% intrauterine fetal deaths in plasmodium falciparum malaria. Conclusion: Plasmodium falciparum malaria is more severe and life threatening in pregnant females as compared to plasmodium vivax, it was found in our study that either primigravida or multigravida. Plasmodium falciparum type of malaria causes more illness with higher incidence of complications, multiorgan involvement and supposedly bad prognosis.

Keywords: P.falciparum; P.vivax; Clinical profile; Anemia.

Introduction

Malaria imposes great socio-economic burden on humanity. It afflicts 90 countries and territories in the tropical and subtropical regions. It affects all ages but pregnant women and children are at high risk because of low immunity. India contributes about 76 % of total malaria cases in South East Asia Region. Malaria is a disease of global importance that results in 300-660 million cases annually and an estimated 2.2 billion people at risk of infection. Approximately 2.5 million malaria cases are reported annually from South Asia, of which 76% are reported in India.[1,4,5] Over 50 million women are exposed to the risk of malaria in pregnancy every year. Pregnancy associated malaria results in substantial maternal and especially fetal and

ACPM Medical College,
Dhule, Maharashtra

Dilip R. Patil, Professor &
HOD, Medicine Dept.

ACPM Medical College,
Dhule, Maharashtra

Naresh S. Vidhate, Resident,
Medicine Dept.,

Dilip R. Patil
E - m a i l :
suyoghospital@gmail.com

neonatal morbidity, causing 75000 to 200 000 infant deaths every year.[2] Malaria is endemic throughout India with 95% of the population at risk of infection.[3]

Four species of malaria parasite that infect human beings (*Plasmodium falciparum*, *P vivax*, *P malariae*, and *P ovale*), *P falciparum* is the most studied. *P vivax* is prevalent in Asia and South America, and may be more common in these areas than *P falciparum*. In pregnancy, only the harmful effects of infection with *P falciparum* have been recognised. Maternal mortality associated with *P falciparum* malaria is highest in areas of low and unstable transmission or in epidemics.

Primigravida, in particular, and secondgravida women are at higher risk for placental malaria than women with multiple prior pregnancies.[6,7] The pregnant women experience more mosquito bites as compared to non-pregnant women, which may be due to increased body surface and specific odors secretions during pregnancy. Pregnant women are highly susceptible to malaria as compared to the adults, and both frequency and severity of disease are higher in pregnant women due to depressed cellular immunity during pregnancy.[8]

Placental malaria is usually more frequent and more severe in primigravida as they lack antibodies that inhibit infected erythrocytes binding to chondroitin- sulphate A. Sequestration of infected erythrocytes in intervillous spaces leads to monocytic inflammatory infiltration in the placenta.

Generally, placental malaria was associated with increased risk of maternal anemia, HIV infection, and maternal mortality, with younger women and primigravida more likely to be affected.[9] A variety of adverse perinatal outcomes, including low birth weight, preterm delivery, intrauterine growth retardation, reduced fetal anthropometric parameters, fetal anemia, congenital malaria, increased mother-to-child HIV transmission, and perinatal mortality, were associated with placental malaria.[9]

Anemia tends to occur between 16-29

weeks - due to haemolysis of parasitized cells and increased demands of pregnancy folate-iron deficiency.[10]

An Indian study reported that pregnant women with malaria are at increased risk of hypoglycemia, cerebral malaria, renal failure, hepatic failure and hypotension.[11]

WHO recommendations for the control of malaria in pregnancy are largely based on the situation in Africa, but strategies in the Asia-Pacific region are complicated by heterogeneous transmission settings, coexistence of multidrug-resistant *Plasmodium falciparum* and *Plasmodium vivax* parasites, and different vectors.

Government of India launched a national programme almost half a century ago, still malaria continues to be a major public health problem. Although some other infectious diseases are also worse in pregnancy, malaria seems to be a special case. As pregnant women and their unborn child are more vulnerable to malaria, so we choose to conduct the study to see the effects of malaria.[12]

Preventing and treating malaria in pregnancy can be a key intervention to improving maternal, fetal and child health globally and is linked to three of the Millennium Development Goals (MDG-3 Maternal Health, MDG-4 Child Health, MDG-5 Combating Infectious Disease).[13]

We hypothesized that the detrimental effects of pregnancy associated malaria would not be distributed uniformly throughout pregnancy and that the timing of the malaria infection would significantly affect placental pathology as well as clinical outcomes in mothers and infants. We designed a prospective study to examine the effect of timing of malaria infection on placental, maternal and infant outcomes.

Materials and Methods

This prospective study was conducted on 27 admitted pregnant female patients in ICU and medicine ward of ACPM medical college,

a 500 bedded teaching hospital in Dhule district, Maharashtra. The time period of study was from April 2013 through Feb 2014. Detailed clinical, biochemical, hematological examinations were conducted to establish the diagnosis of type of malaria and the various clinical manifestations. In ACPM medical college, Dhule there were around 175 deliveries done in given period of time. Out of 175 pregnant females 27 (15%) females were found to be positive of malarial parasites, so these 27 cases are taken for our study. There were around 256 cases of malaria (*p.falciparum* and *p.vivax*) in total of both males and females treated in medicine department, so out of these 256 cases 27 (10.6%) cases were found to be pregnant females.

Selection Criteria

It included pregnant female patients of different ages with documented plasmodium falciparum, vivax and mixed malaria after obtaining the formal consent from the pregnant female patient or relatives.

The study was designed to include the Demographic, clinical data, biochemical and hematological changes observed in pregnant female patients. The data was entered into a structured proforma separately. Management was done as per standard guidelines. Patients were discharged after significant improvement in clinical as well as hematological and biochemical parameters.

Detailed clinical examination was done in all pregnant female patients. All these patients of Plasmodium falciparum, vivax and mixed malaria were evaluated clinically for history of fever, headache, myalgia, nausea vomiting, diarrhea, jaundice, cough, breathlessness, altered sensorium, convulsions, pallor, icterus, hepatosplenomegaly.

A total of 27 pregnant female patient conformed to the selection criteria and were included as part of sample size. The diagnosis of malaria was confirmed by conventional thick and thin peripheral blood films were Field stained and examined microscopically

using a 100x oil immersion objective to detect and quantify parasitemia. A diagnosis of microscopically detectable malaria infection was made when asexual stage malaria parasites were detected on a thick film.

The laboratory investigations done in all the pregnant female patients included a complete hemogram, platelet count, random blood sugar, urea, creatinine and s. electrolytes. Liver function was evaluated by determining the levels of s. bilirubin blood for hepatitis B and C was done in all the pregnant female patients to rule out possibility of concomitant viral hepatitis.

Detailed ultrasonography was done to check the size and echo texture of the liver

Formal approval of hospital ethical committee and written consent of the pregnant female patients were obtained for this study.

Results

This study was conducted in ACPM medical college dhule district Maharashtra state, where 27 cases of documented malaria were taken and their clinical profile and outcome were studied in details.

Following statistical analysis shows study's results:

Age Group

Out of total 27 cases malaria both *P.falciparum* as well as *P.vivax* the most common age group of pregnant women affected was 25-35 years which was 55.6 % where as 15-25 years of age group were found to be infected with malaria were 37% and 35-45 years of age group were 7.4%

Table 1		
Age Group	Frequency	Percentage
15-25	10	37
25-35	15	55.6
35-45	2	7.4
Total	27	100