



OUTCOME AND COMPLICATIONS OF MALARIA IN PREGNANT WOMEN ATTENDING ANTE NATAL CARE AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Malaria and pregnancy usually affect the course of each other adversely. The physiological changes of pregnancy and pathological changes due to malaria have a deleterious effect on the course of each other. **Material and methods:** This retrospective study was carried out from April to September 2016 at TMMC & RC Moradabad which serves as a tertiary level hospital for the local population and referral hospital for the adjoining districts. Women with malaria and pregnancy were included in the study. **Results:** Fifty pregnant patients with diagnosis of malaria were included in the study. 49 patients had plasmodium vivax infection and only 1 patient had plasmodium falciparum infection. Malarial infestation was more common in primigravida. 17 patients had typhoid along with malaria which added to complication. **Discussion:** Maternal, placental or fetal malaria infection during pregnancy adversely affects development and survival of fetus. Malaria can cause low birth weight, maternal anemia, abortion and stillbirth due to placental production of chemokines which is an important trigger for monocyte accumulation in placenta. **Conclusion:** Maternal malaria adversely affects the pregnancy outcome. It increases the risk of spontaneous abortion, stillbirths, premature delivery and low birth weight. All patients with fever in pregnancy must have screening for malarial parasite.

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INTRODUCTION

Malaria and pregnancy usually affect the course of each other adversely. The physiological changes of pregnancy and pathological changes due to malaria have a deleterious effect on the course of each other. In endemic areas, clinical episodes of malaria are more frequent and more severe during pregnancy as compared to non-pregnant because of the hormonal and immunological changes that take place in a pregnant women.^{1,2} The *P. falciparum* which is the most dangerous parasite is confined to tropical or sub tropical regions, because its development is greatly retarded when the temperature falls below 20°C. Pregnant ladies with Plasmodium falciparum are prone to get high levels of parasitaemia, hypoglycemia, acute pulmonary edema, foetal distress, premature labour, spontaneous abortions and stillbirths. Placental malaria is common among pregnant women and is fatal to both the mother and her fetus. Maternal malaria causes placental insufficiency leading to low birth weight.³ In addition, pregnant women who have severe *P. falciparum* infection are at risk of developing severe anemia.⁴ It is therefore estimated that malaria is responsible for 19% of low birth weight in infants that are born in malaria endemic

areas.⁵ In an effort to control malaria, the World Health Organization (WHO) developed a strategic framework that guides countries to formulate their own policies.⁶ The guide recommends the use of Intermittent Prevention Treatment (IPT) with sulfadoxine-pyrimethamine (SP), use of insecticides treated bed nets (ITNs) and good case management of malaria. Despite the control efforts to prevent malaria in pregnancy it poses problem with the women's comprehension of malaria risks in pregnancy and compliance to anti-malaria guidelines.⁷ The non-immune, primigravida are the most affected.⁸ Understanding of risks leading to malaria and its prevention can greatly assist in reduction of maternal and infant mortality rates. Thus, this trial was conducted to study the complications and outcome of malaria during pregnancy at a tertiary care centre TMMC&RC Moradabad Uttar-Pradesh.

MATERIAL AND METHODS

This retrospective study was carried out from April – September 2016(6 months) at TMMC&RC Moradabad which serves as tertiary level hospital for the local population and referral hospital for the adjoining districts. Women with malaria and pregnancy were included in the study. Patients who had complaints of fever were investigated for typhoid, dengue, urine test etc. Malaria was confirmed by thick and

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thin films of finger prick blood smears. Personal and reproductive histories were obtained. The results of laboratory investigations (complete hemogram, blood group) were taken. A hemoglobin level <10 g/dl was considered as low. The birth weight of neonates were obtained, low birth was defined as < 2.5 kg.

RESULTS

Fifty pregnant patients with diagnosis of malaria were included in the study. 49 patients had plasmodium vivax infection and only 1 patient had plasmodium falciparum infection. Regarding parity and stage of pregnancy, malarial infestation was more common in primigravida and majority of the patients were in the third trimester of pregnancy. (Table-1). 17 patients had typhoid along with malaria which added to complication.

Table 1 Malarial parasitemia by parity and stage of pregnancy

Parity	First Trimester	Second Trimester	Third Trimester	Total
P ₀	4	9	12	25
P _{1/2}	1	6	9	16
P _{3/>3}	1	3	5	9
Total	6	18	26	

Table 2 Laboratory parameters

Parameter	Number	Percentage
Widal/Typhidot positive	17	34%
Thrombocytopenia(<10,000)	2	4%
10,000-50,000	33	66%
>50,000	15	30%

(Table-2) Regarding pregnancy outcome 3 patients had spontaneous abortion, 2 patients had intrauterine fetal death and 23 patients went into pre-term labor. (Table-3). 19 patients were having severe anemia and thus required blood transfusion with PRBC. None of them had cerebral malaria. (Table-4,5).

Table 3 Pregnancy outcome

Outcome	Number	Percentage
Spontaneous abortion	3	6%
Preterm Labor	23	46%
Intrauterine death	2	4%

Table 4 Mode of Delivery

Mode of Delivery	Number	Percentage
Normal delivery	17	34%
LSCS	27	54%

Table 5 Fetal and Maternal Complications

Complications	Number	Percentage
Fetal complications- Low birth weight	18	36%
Neonatal death	2	4%
Congenital malaria	0	0
Maternal Complications - Severe Anemia	19	38%
Cerebral Malaria	0	0
Renal Failure	0	0

Table 6 Blood Components transfused

Blood component	Number
PRBCs	54
FFP	21
Single Donor Platelets/Jumbo pack	31
Random donor platelets	14

DISCUSSION

Maternal, placental or fetal malaria infection during pregnancy adversely affects development and survival of fetus. Malaria can cause low birth weight, maternal anemia, abortion and stillbirth due to placental production of chemokines which is an important trigger for monocyte accumulation in placenta.⁹ These pigment containing placental monocytes are associated with anemia and low birth weight due to malaria and may be causative in their development.¹⁰ Malarial infection can aggravate other infection which has a detrimental effect on maternal and infant survival as observed in our study where many patients had typhoid, dengue along with malaria.¹¹ These malaria induced medical problems constitute major clinical, public health and research challenges.¹² Incidence of malaria was observed more in primigravida in our study which is supported by study done by Rogerson and a study done at Koraput district of Orissa.^{13,14} Majority of the participants in this study were aged between 20 and 30 years that correlated with the study reported in Nigeria.¹⁵ Complications observed in our study were also more in primigravida than in multigravida as evidenced by previous studies.¹⁶ The disparity in Plasmodium species parasitemia between multigravida and primigravida could be attributed to acquired immune-efficiency of the multigravida to malaria as parity advances. Depressed immunity due to delayed antibody expression and/or lack of awareness on the necessary preventive measures in pregnancy could also be responsible for the increased malaria parasitemia in the primigravidae. Maternal malaria not only affects immediate infant health but can also result in high susceptibility to parasite during the first year of life.¹⁷ The risk of low birth weight is associated with extent of anaemia.^{18,19} Malarial infection also contributes to preterm labour. Maternal fever close to term can also lead to deaths of infant aged between 1 and 3 months.²⁰ An extensive literature work was undertaken which showed that 25% of pregnant women harbour placental infection and 5.7% of infant death in these areas could be due to indirect cause of malaria in pregnancy.²¹ Re-infection or treatment failure were found to be common, both in the infants and pregnant women.²² It is clear that this infection contributes to major perinatal mortality by affecting both mother and fetus independently.

CONCLUSION

Maternal malaria adversely affects the pregnancy outcome. It increases the risk of spontaneous abortion, stillbirths, premature delivery and low birth weight. All patients with fever in pregnancy must have screening for malarial parasite.

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