

# OUTCOME AND COMPLICATIONS OF MALARIA IN PREGNANCY

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## ABSTRACT

**Background:** Malaria during pregnancy may affect the course adversely. The physiological changes of pregnancy and pathological changes due to malaria have a deleterious effect on each other. This trial was conducted to study the complications and outcome of malaria during pregnancy.

**Material & Methods:** It was a prospective study carried out at District Headquarter Teaching Hospital, D.I.Khan, Pakistan, from 1<sup>st</sup> April 2005 to 31 December 2006. Patients with malaria and pregnancy were included in the study.

**Results:** One hundred and twenty-nine pregnant patients with malaria were included. Regarding parity and stage of pregnancy, malarial infestation was more common in multipara and majority 52(40%) of patients were in second trimester of pregnancy. The commonest pathogen found was Plasmodium falciparum in 99(76.75%). Most of the infected patients 77(59.70%) with Plasmodium falciparum were multigravida. Regarding complications, 81(62%) patients were having hemoglobin 8-10g/dl and 48(38%) less than 8g/dl. Three (2%) patients were having cerebral malaria. Regarding pregnancy outcome, 39(30%) developed puerperal pyrexia, 18(14%) had spontaneous abortion, 11(9%) babies of infected mothers died in neonatal period and 8(6%) patients had pre-term labor.

**Conclusion:** Maternal malaria adversely affects the pregnancy outcome. It increases the risk of spontaneous abortion, stillbirths, premature delivery and low birth weight.

**Key words:** Pregnancy, Malaria, Plasmodium, Fever.

## 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 and mortality rate is higher among them as compared to non-pregnant.<sup>1</sup>

Pregnant ladies with Plasmodium falciparum are prone to get high levels of parasitaemia, hypoglycemia, acute pulmonary edema, foetal distress, premature labour, spontaneous abortions and still births.<sup>2</sup>

The non-immune, primigravida are the most affected.<sup>3</sup> It is reported that 20-40% of babies of infected mothers has low birth weight.<sup>4,5</sup>

This trial was conducted to study the complications and outcome of malaria during pregnancy in Dera Ismail Khan District which is an endemic area for malaria.

## MATERIAL AND METHODS

This prospective study was carried out from 1<sup>st</sup> April 2005 to 31 December 2006 at District Headquarter Teaching Hospital, D.I.Khan, which serves as tertiary level hospital for the local population and referral hospital for the adjoining districts. Dera Ismail Khan District is lacking proper drainage and irrigation facilities so that sufficient sites are provided for the breeding vectors of plasmodia.

Women with malaria and pregnancy were included in the study. Malaria was confirmed by thick and thin films of finger prick blood smears. Personal and reproductive histories were obtained.

The results of routine 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

One hundred and twenty-nine pregnant patients with the diagnosis of malaria were included in the study. Regarding parity and stage of preg-

**Table-1: Malarial parasitaemia by parity and stage of pregnancy.**

Parity	First Trimester	Second Trimester	Third Trimester	Puerperal	Total
P <sub>0</sub>	11	17	1	3	32
P <sub>1-2</sub>	7	6	5	14	32
P <sub>3+</sub>	13	29	16	7	65
<b>Total</b>	<b>31</b>	<b>52</b>	<b>22</b>	<b>24</b>	<b>129</b>

**Table-2: Type of Parasitaemia in relation to parity.**

Parity	Plasmodium falciparum		Plasmodium vivax	
	Cases	Percentage	Cases	Percentage
Primigravida	22	17.05%	10	7.75%
Multigravida	77	59.70%	20	15.50%
<b>Total</b>	<b>99</b>	<b>76.75%</b>	<b>30</b>	<b>23.25%</b>

nancy, malarial infestation was more common in multipara and majority of the patients were in the second trimester of pregnancy. (Table-1)

Plasmodium falciparum was found more as compared to vivax. Most of the infected patients were multigravida 77 (59.75%). (Table-2)

Eighty-one (62%) of patients were having hemoglobin 8-10g/dl and 48 (38%) less than 8g/dl. Three (2%) patients of the total were having cerebral malaria.

**Table-3: Pregnancy outcome.**

Outcome	Number of cases	Percentage
Spontaneous abortion	18	14%
Preterm Labor	8	6%
Puerperal Pyrexia	39	30%
Severe Anaemia (Hb < 8g/dl)	48	38%
Cerebral Malaria	3	2%
Neonatal death	11	9%
No complication	53	41%

Regarding pregnancy outcome, 39(30%) developed puerperal pyrexia, 18(14%) had spontaneous abortion, 11(9%) babies of infected mothers died in neonatal period and 8(6%) patients had pre-term labor. (Table-3)

## DISCUSSION

Maternal, placental or foetal malaria infection during pregnancy adversely affects development and survival of foetus through low birth weight, maternal anemia, and possibly abortion and stillbirth. These malaria induced medical problems constitute major clinical, public health and research challenges.<sup>6</sup> This infection can aggravate other infections, dual infection has additional detrimental effects on maternal and infant survival in an area where HIV and malaria co-exist.<sup>7</sup> The important aspect is that it is preventable cause of low birth weight deliveries world wide. In women from non-endemic areas or travelers to area, infection is associated with high risk of maternal and perinatal mortality.

Complications are more in primi than multigravida.<sup>8</sup> Local placental production of chemokines is increased in malaria which is an important trigger for monocyte accumulation in placenta.<sup>9</sup> These pigment containing placental monocytes are associated with anaemia and lowbirth weight due to malaria and may be causative in their development.<sup>10</sup> Maternal malaria not only affects immediate infant health but can also result in high susceptibility of child to parasite during the first year of life.<sup>11</sup>

Although randomized controlled trial of interventions to reduce malaria in pregnancy has demonstrated an increase in birth weight of new born in primigravida, the subsequent impact on infant mortality in all parity has not been assessed. 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.<sup>12</sup> Many studies have shown that primigravida are high risk group, as in areas of endemic transmission, the prevalence was high, ranging from 64% in primigravida to 30% in gravida 5 and above. The risk of low birth weight is associated with extant of anaemia.<sup>13,14</sup>

Malarial infection also contributes to preterm labour. Maternal fever close to term is also associated with deaths of infant aged between 1 and 3 months, whereas no risk factors could be identified for deaths that occurred later in infancy.<sup>15</sup>

The clinico-epidemiological pattern of malaria infection in a cohort of prenatal women and infants was analyzed during malaria epidemic. They found that 88% infections were of *Plasmodium falciparum*, and its highest prevalence was recorded in second trimester (59%). Re-infection or treatment failure were found to be common, both in the infants and pregnant women.<sup>16</sup>

In study conducted in Koraput district of Orissa, a tribal area endemic for malaria in India, there was significant different parasite incidence between primi and multigravida which clearly correlates with our study as well.<sup>5</sup> 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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