

# Pregnancy and malaria

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## Introduction

MALARIA EXERTS a profound influence on pregnancy. Indirectly, it undermines the health of the mother and reduces her to a poor state to withstand the stresses and demands of pregnancy. Of more importance is the fact that by its ill-effects, malaria often actually causes an interruption of the pregnancy itself. In malarious areas, it becomes an important cause of foetal loss and sometimes of maternal deaths as well. The control of malaria will, therefore, result in a marked improvement in perinatal and infant mortality as well as benefiting the health of the expectant mother. In this paper, cases of malaria occurring during pregnancy are studied as a means of defining the precise effects of malaria on pregnancy.

## Materials and Methods

The study was carried out among patients admitted to the maternity unit of the General Hospital, Kuala Trengganu, during the three years 1969 to 1971 the author was attached there. Only those cases in whom the malaria parasite was positively identified on blood film examination were included in the study. A total of 37 cases were obtained.

## Results and Discussion

Table 1 shows the time of presentation of malaria in relation to the duration of pregnancy.

Table I

<i>Duration</i>	<i>Cases</i>
Early Pregnancy	5
Late Pregnancy	17
Puerperium	13
Newborn Infants	2
TOTAL	37

All the patients came from an endemic area and it is likely that they possessed varying degrees of immunity to malaria. Acquired immunity to malaria is always precariously established and often does breakdown under conditions of stress, especially the stress of pregnancy. Hence clinical manifestation of latent malaria occurs. Breakdown in immunity occurs more commonly as the pregnancy advances and the above figures bear this out. As can be seen, most of the cases presented either in late pregnancy or in the immediate puerperium. Five cases also occurred in early pregnancy and there were two cases of congenital malaria.

Of these five cases, three aborted. In early pregnancy, malaria can cause abortion. It is likely that hyperpyrexia itself is the precipitating cause of the abortion. Hyperpyrexia acts either by activating the uterus and causing it to expel its contents or by causing the death of the foetus

**Malaria in Early Pregnancy**

Table 2 gives details of the 5 cases.

Case	Pregnancy	Type	Fever	Initial Presentation	Outcome
1	8 weeks	BT	3 days	Threatened Abortion	Aborted
2	20 weeks	ST	3 days	Threatened Abortion	Aborted
3	10 weeks	ST	5 days	Incomplete Abortion	Aborted
4	12 weeks	ST	1 day	Threatened Abortion	Pregnancy continued
5	14 weeks	ST	2 days	Threatened Abortion	Pregnancy continued

which is followed by abortion. In all the three cases which aborted, the fever had been present for more than 48 hours. Where hyperpyrexia is of short duration, i.e. less than 48 hours, and prompt treatment is instituted, the pregnancy may be saved. This is shown by the remaining two cases, where the fever was of short duration and with treatment the pregnancy continued uninterrupted. Early diagnosis and treatment of malaria is therefore of great importance if the pregnancy is to be saved.

**Malaria and Late Pregnancy**

Table 3 shows an analysis of the cases of malaria presenting during late pregnancy. Of the 17 cases, 3 were primigravids and the rest multigravids. Lawson (1967) stated that breakdown in malaria immunity is most likely to occur during the first pregnancy. However, the above figures do not bear this out as most of the cases occurred in multigravid patients.

The complications caused by malaria on advanced pregnancy are discussed below.

**Premature Labour**

Three out of the seventeen cases went into premature labour as a result of the malaria. Of these, one infant born at 32 weeks died in the neonatal period. In five cases (Case numbers 3, 13, 14, 15 & 16) the pregnancy continued on to term following the treatment for malaria. Thus again the value of early diagnosis and treatment of malaria in safeguarding the pregnancy is seen.

**Intrauterine Death**

Five patients presented with intrauterine deaths. In all these cases, the fever had been present for

more than 3 days. Hyperpyrexia itself is the most likely cause of the intrauterine deaths. If a patient in late pregnancy develops acute malaria and a delay in seeking treatment occurs, there appears to be an almost 30% chance of the foetus dying in utero.

**Foetal Loss**

In the series, 6 infants (35%) were lost — five due to intrauterine deaths and one neonatal death due to prematurity. Thus it is clear that malaria exerts a high toll in terms of foetal wastage.

A further point of interest is that the mean birth weights of infants born of malarious mothers is reduced compared to normal mothers (Lawson 1967). The reason for smaller infants is that placental parasitisation occurs in pregnant women and the cellular reaction caused in the placenta interferes with and impairs the growth of the foetus.

**Cerebral Malaria**

There were three cases of cerebral malaria (Case Nos. 7, 8, & 17). All of them presented late, the minimum being after three days. In two cases, the infant was already dead in utero and the third patient delivered a live infant.

All the three cases were in a poor state on admission — comatose, hyperpyrexia, severely anaemic, etc. — and in spite of vigorous therapy, all three died. Lawson was of the opinion that cerebral malaria is very uncommon in the immune pregnant woman, but I do not believe this to be so as these women who had cerebral malaria were all from an endemic area. With the stress of pregnancy and the lowering of immunity, cerebral

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Table III

Case	Gravida	Hb	Type of Malaria	Fever	Pregnancy	Complication
1	4	51%	ST	2 days	32 weeks	Premature del. Neonatal death
2	3	67%	ST	5 days	Term	I.U.D. stillbirth
3	7	40%	ST	7 days	32 weeks	Pregnancy continued
4	3	54%	BT	3 days	30 weeks	I.U.D. stillbirth
5	2	52%	ST	1 day	Term	Normal delivery
6	1	59%	ST	3 days	Term	I.U.D. stillbirth
7	5	40%	Cerebral Malaria	5 days	Term	I.U.D. s/birth. Maternal death
8	4	31%	Cerebral Malaria	3 days	Term	I.U.D. s/birth. Maternal death
9	1	71%	ST	1 day	34 weeks	Premature del. Live infant.
10	4	60%	ST	2 days	35 weeks	Premature del. Live infant.
11	7	55%	ST	1 day	Term	Normal delivery
12	6	65%	BT	2 days	Term	Normal delivery
13	1	60%	ST	2 days	36 weeks	Pregnancy continued to term.
14	4	70%	ST	3 days	32 weeks	Pregnancy continued to term.
15	3	55%	ST	2 days	34 weeks	Pregnancy continued to term.
16	6	60%	BT	2 days	28 weeks	Pregnancy continued to term.
17	2	81%	Cerebral Malaria	3 days	Term	Normal delivery Maternal death

malaria would be commoner in the pregnant woman. There is also no doubt that cerebral malaria occurring in pregnancy has a high mortality indeed. This high mortality rate was also seen in Ceylon during the great epidemic 1934-1935, where the mortality in pregnancy was twice that of the non-pregnant women.

Although most textbooks make much about confusing cerebral malaria in pregnancy with eclampsia, in practice this is not so and diagnosis is often straightforward.

In the majority of these cases (10 out of 13), the fever manifested within 24 hours of the delivery. In the differential diagnosis, uterine, urinary, and breast infections have to be kept in mind, but malaria should be high on the list in endemic areas. In late pregnancy or in the immediate puer-

perium, latent malaria often unmask itself and presents as clinical malaria. During the puerperium, no special complications are likely to occur as a result of the malaria and the treatment and response to drugs present no problems. Malaria is no contraindication to breastfeeding.

The above two cases were definitely congenital malaria as the malaria appeared soon after delivery. Both the mothers of the infants were symptomless but had enlarged spleens and were most likely latent cases of malaria. These two cases show that congenital malaria is not extremely rare as stated by Lawson (1967). As stated before, placental parasitisation commonly occurs during pregnancy, but the exact route by which the parasites cross the placenta into the infant is unknown. The infant normally gets passive immunity from the mother.

**Malaria in the Puerperium**

Table 4 shows the 13 cases which manifested malaria in the puerperium.

Case	Gravida	Type of Malaria	Hb	Time of onset of fever
1	7	QT	37%	1 day after delivery
2	1	BT	60%	1 day after delivery
3	1	ST	78%	1 day after delivery
4	6	ST	50%	1 day after delivery
5	2	BT	60%	10 days after delivery
6	5	ST	37%	13 days after delivery
7	3	ST	49%	immediately after delivery
8	2	ST	65%	2 days after delivery
9	9	ST	60%	1 day after delivery
10	1	ST	55%	1 day after delivery
11	4	ST	42%	1 day after delivery
12	11	ST	40%	1 day after delivery
13	3	ST	70%	1 day after delivery

**Congenital Malaria**

Table 5 shows cases of malaria occurring in newborn infants.

Case	Mother's Particulars	Infant	Type of Malaria	Onset of Fever
1	Gravida 4. No symptoms Enlarged spleen Blood film negative	Term	BT	14 hours after delivery
2	Gravida 6. No symptoms Enlarged spleen Blood film negative	Premature	ST	20 hours after delivery

If this passive immunity is low, then congenital malaria occurs. In both the infants, the response to treatment was excellent.

**General Effects of Malaria**

The general debilitating effects of malaria —

anaemia, chronic ill health, lassitude, etc., although not specifically referred to, underline all these patients. A glance at Tables 3 and 4 show that nearly all the patients were extremely anaemic, and many needed blood transfusion and nutritional buildup. These debilitating ill-effects of

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chronic malaria have been well pointed out by Sandosham (1970).

### Conclusion

The striking breakdown in malaria immunity as a result of a pregnancy and the unmasking of clinical malaria can be seen in this series. Bearing in mind the high toll exerted in terms of foetal loss and maternal illhealth, the question of prophylaxis comes in naturally. The control and eradication of malaria will markedly improve the health of the expectant mother and her unborn child. Prophylaxis, as an integral part of antenatal care, can markedly reduce the illeffects of malaria on pregnancy. In countries where this has been tried out, e.g. Nigeria (Lawson - 1967), beneficial effects have been noted. Therefore, in endemic areas there is a strong case for routine malaria prophylaxis as a part of antenatal care.

### Summary

1. Malaria causes serious complications in pregnancy. In early pregnancy, it can cause

abortion. Premature labour and intrauterine death of the foetus are the other complications which can occur later on in pregnancy.

2. Malaria may present as a puerperal pyrexia following delivery.
3. Cerebral malaria occurring during pregnancy is associated with a high mortality.
4. The malaria parasite can cross the placental barrier and cause congenital malaria.
5. Routine malaria prophylaxis as a part of antenatal care is advocated, to eradicate the ill-effects of malaria in endemic areas.

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