Review on Prevention And Treatment Of malaria During Pregnancy

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Abstract- Although being pregnant is a lovely and joyful time, it's crucial to take additional care to ensure the health of the mother and the unborn child. Malaria is one such issue; it is a mosquito-borne infection that can seriously harm expectant mothers. We'll look at how to prevent and cure malarial during pregnancy in this post, so that mom and baby have a joyful and safe journey.

Malaria infection during pregnancy is an important public health problem with substantial risks to both the mother and foetus. Pregnant women are the most vulnerable group of malaria-associated morbidity and mortality. A pregnant woman has an increased risk (up to four times) of getting malaria and twice the chances of dying from malaria, compared to a non-pregnant adult, because the immune system is partially suppressed during pregnancy. Malaria in pregnancy not only affects the mother but also has a dangerous sequel for the developing foetus, resulting in premature delivery or intrauterine growth retardation. Diagnosis of malaria in pregnancy remains a challenge due to the low parasite density and placental sequestration of Plasmodium falciparum.

Keywords: treatment of malaria, pregnancy, PAM (pregnancy-associated malaria, P. falciparum infection.

Introduction:
Pregnancy-associated malaria (PAM) is a major health problem, which not only affects mother but also affects the developing foetus. Worldwide, 50 million women are at risk of PAM per annum. Depending upon the transmission pattern of malaria, PAM has been studied in two different geographical regions: one with a high and stable transmission rate (Africa) and another one with a low and unstable transmission rate (Asia-Pacific region). The majority of the studies are from Sub-Saharan Africa, where Plasmodium falciparum causes the majority of the cases. Approximately 25 million pregnant women are at risk of P. falciparum infection, and 25% of women had evidence of placentation infection at the time of delivery.

Due to the high endemicity of malaria in these regions, adults develop natural immunity due to repeated infections; thus, PAM rarely results in fever and remains undetected and untreated. On the other hand, Asia-Pacific region has a low transmission of P. falciparum and women have little acquired immunity against malaria. In Asia-Pacific region, most pregnant women are at risk of Plasmodium vivax infection. Asia-Pacific region consists of WHO South-east Asia and Western Pacific regions. Approximately, 75 million women became pregnant in the Asia-Pacific region in 2007.

allowed greater numbers of people to live in settled proximity with large numbers of animals. It also created peridomestic-puddled water, ideal breeding grounds for the Anopheles gambiae vector. Malaria became a human disease and the female mosquito could nourish their eggs on the steady food supply of human blood of the settled human agriculturalists (TDR, 2003).

Subsequently, with human migration, which "has always played a role in malaria transmissions" (BruceChwatt, 1988), malaria was brought to the Nile Valley, Mesopotamia, India, and South China. The conquest of the Americas affected the spread of the disease, as did the slave trade a few centuries later. Ways of dealing with malaria followed its proliferation, from administering the herb qing-haosu as a treatment in China more than 2000 years ago to employing the bark of the "fever hark tree" (Chinchona) in the seventeenth century and possibly much earlier, in South America, to the use of bed nets as a preventive method, going back several millennia. Bruce-Chwatt (1988) has traced the use of hand woven nets back to antiquity, finding mention of it in the Bible (Judith X; 21) and in the writings of Herodotus discussing customs in Egypt. As an aside, it should be mentioned that a drug called artemisinin, refined from the qinghao su plant in China some thirty years ago, has been found by many experts to be highly effective and it is currently (2002) widely used in China, Vietnam and South Africa. It is being argued whether or not it should be widely used in Africa and elsewhere where chloroquine (CQ) resistance is widespread (McNeil, 2002). Even the earliest civilizations recognized that unhealthy conditions could be created by anumber of causes: natural disasters, destructive wars, or uncontrolled cultivation of land.
Diagnosis
Diagnosis of malaria in pregnancy is challenging as P. falciparum parasites are either absent or undetectable in peripheral blood, due to the sequestration of parasites in placenta. This is due to the fact that infected erythrocytes are sequestered in the intervillous space. Infections having a low parasite density may also affect the pregnant women and her developing foetus. Thus, early diagnosis is essential for the timely initiation of treatment. Although, it is considered to be a gold standard for histological examination of the placental malaria, it is not applicable for routine diagnosis. However, placental examination is not possible before the delivery and thus, antenatal placental infection can only be inferred by peripheral blood smear examination. Although polymerase chain reaction (PCR) has the potential to diagnose malaria in pregnancy with higher sensitivity and specificity. A recent study by Mayor et al. have shown that among the PCR positive for P. falciparum in peripheral and/or placental blood samples, 71.3, 61.5, 60.7 and 58.2% were negative by peripheral microscopy, by HRP2 ELISA in plasma, by HRP2 RDT in plasma and by histology respectively. However, molecular techniques are costly and are not available everywhere. Studies have shown a marked underestimation of malaria infection in pregnant women when diagnosed by standard microscopy in peripheral and placental blood as compared to molecular techniques such as polymerase chain reaction (PCR). Thus, there is an urgent need for more accurate diagnostic tools to detect malaria in pregnancy to prevent the negative clinical impact of hidden infection in pregnancy.

Prevention of malaria during pregnancy
Follow these preventive measures to minimize the likelihood of getting infected:

1. Insecticide-treated bed nets (ITN)
2. Intermittent presumptive treatment (IPT)
3. Wearing light colored clothes
4. Stay in cool areas

1. Insecticide-treated bed nets (ITN) help in repelling malaria causing mosquitoes. They are cost-effective and are a safe way to prevent malaria, thereby protecting both the expectant mother and her baby.

2. Intermittent presumptive treatment (IPT) is a full therapeutic course of antimalarial medicine that reduces the chances of maternal malaria episodes, maternal and fetal anemia, placental parasitemia, low birth weight, and neonatal mortality. WHO recommends IPTp with sulfadoxine-pyrimethamine (IPTp-SP) in regions that have moderate to high risk of malaria.

3. Wearing light colored clothes: Generally, mosquitoes are attracted to dark colors. Pregnant women, who live or travel to malaria-prone areas, should wear light-colored and full length garments with long sleeves to avoid exposure of skin.

4. Stay in cool areas: Stay in cool or air conditioned areas since mosquitoes cannot flourish in cold temperatures.

Treatment for severe malaria in pregnancy:
The most recommended treatment is using intravenous (IV) artesunate or quinine. Towards the third trimester, artesunate suits the best because quinine poses the risk of hypoglycemia. Paracetamol tablets are recommended to subside high fever. Its effect lasts for four to six hours after which the patient might feel feverish again. This medicine is safe to administer during pregnancy and can be taken three to four times a day.

While getting treated, you need to take care not to get dehydrated or over hydrated. Also, take adequate calories to overcome weakness.

Drugs For Malaria In Pregnancy:
First trimester: Quinine + Clindamycin 2nd/3rd trimester: above + Artemisin + Mefloquine, Pyrimethamine / sulfadoxine (as required)
Contra indicated: Tetracycline; Doxycycline; Primaquine; Halofantrine.

Symptoms of Malaria During Pregnancy:
In its early stage, the symptoms of malaria can be similar to those of influenza or viral infection. Only a blood test can help determine the exact infection. The common symptoms of malaria in pregnancy are:

- High fever and sweating or feeling chills
- Nausea
Cough Headache Vomiting Muscle pain Diarrhea Jaundice 
Respiratory distress

Splenomegaly (enlargement of the spleen) Pallor (pale appearance)

**Overview**
Although being pregnant is a lovely and joyful time, it's crucial to take additional care to ensure the health of the mother and the unborn child. Malaria is one such issue; it is a mosquito-borne infection that can seriously harm expectant mothers. We'll look at how to prevent and cure malarial during pregnancy in this post, so that mom and baby have a joyful and safe journey.

Malaria infection during pregnancy is an important public health problem with substantial risks to both the mother and foetus. Pregnant women are the most vulnerable group of malaria-associated morbidity and mortality. A pregnant woman has an increased risk (up to four times) of getting malaria and twice the chances of dying from malaria, compared to a non-pregnant adult, because the immune system is partially suppressed during pregnancy. Malaria in pregnancy not only affects the mother but also has a dangerous sequel for the developing foetus, resulting in premature delivery or intrauterine growth retardation. Diagnosis of malaria in pregnancy remains a challenge due to the low parasite density and placental sequestration of Plasmodium falciparum. Thus, there is an urgent need for new diagnostic methods to detect malarial parasites in the pregnant women. Though antimalarial drugs are available, which can be safely given in pregnancy, increasing drug resistance of malarial parasite may pose a big problem in the future. In this chapter, we review the burden of pregnancy-associated malaria (PAM), its pathogenesis, diagnostic issues during pregnancy and recent guidelines for chemoprophylaxis and treatment.

**Conclusion:**
Pregnant women are uniquely susceptible to malaria. Optimal malaria prevention varies with the transmission; in higher transmission areas ITNs have demonstrated benefits. Whether preventative treatment approaches such as IPTp or IST will have a place outside Africa will depend on results of studies presently in progress. In lower transmission settings, women may lack malaria immunity and are at risk of developing severe, potentially fatal disease or losing their babies to miscarriage or stillbirth; they require immediate diagnosis and treatment. ACTs are recommended in most circumstances, although quinine remains the first choice in the first trimester of pregnancy. The approach to treatment should be tailored according to pregnancy trimester and clinical severity of malaria.

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