South Australian Perinatal Practice Guidelines

Malaria in pregnancy

Introduction

- Malaria occurs mainly in the tropical areas of Africa, Asia, and Latin America
- Malaria is a parasitic disease spread by the bite of the Anopheles mosquito, which is active between dusk and dawn
- Four species of the malaria parasite infect humans:
  - *Plasmodium falciparum* (most severe form)
  - *Plasmodium vivax*
  - *Plasmodium ovale*
  - *Plasmodium malariae*
- Falciparum malaria is particularly dangerous during the first pregnancy of non-immune women. Severe malaria may lead to fetal loss and high maternal mortality due to hypoglycaemia and acute respiratory distress syndrome
- Australia was declared malaria-free by the World Health Organization in 1981, and since then, only a small number of cases of locally acquired malaria have been reported from North Queensland (in Cape York, Cairns and Badu Island in the Torres Strait) (CDA 2001)
- Pregnant women should be advised to avoid travel to malaria-endemic areas
- Pregnant women who cannot avoid travelling to malaria-risk areas in South America, Africa, the Indian subcontinent, Asia, and the South Pacific should take mefloquine as their antimalarial drug (www.cdc.gov/travel/mal_preg_pub.htm)
- Pregnant women should not travel to a malaria-risk area without appropriate antimalarial drug treatment

Literature review

- Malaria contributes to maternal anaemia and is related to low birthweight (Garner and Gülmezoglu 2004)
- Drug treatments for malaria during pregnancy reduce severe antenatal anaemia, and are associated with higher birthweight in the baby, particularly for low parity women (Garner and Gülmezoglu 2004)

Clinical symptoms

- Fever
- Malaise
- Headache
- Abdominal discomfort
- Muscle and joint aches
- Chills, sweats, rigors
- May present as a respiratory or gastrointestinal illness

Incubation period

- 7 - 10 days, and 95 % of cases develop symptoms within one month

Route of transmission

- Vector is the Anopheles mosquito

Infection precautions

- Standard precautions
- Minimise exposure to mosquitoes in malarial risk areas

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- Avoid outdoor night time activities
- Use mosquito nets preferably impregnated with Permethrin-emulsifiable concentrate. Permethrin is an insecticide but not a repellent (not recommended for skin application)
- Perfumes and dark coloured clothing attract mosquitoes
- Wear clothing that covers the arms and legs in the evening
- Use a mosquito repellent

- Consider appropriate malaria chemoprophylaxis with mefloquine

Diagnosis

- Malaria should be considered in pregnant women with a fever who have travelled to malaria-endemic areas
- For laboratory diagnosis, blood should be collected in an EDTA tube for 'thick and thin films' to detect malarial parasites. Also a malarial antigen assay is available in South Australia

Treatment

Specialist advice should be sought

Quinine

- The treatment of choice in pregnancy is quinine. Quinine has proved to be safe when used in normal therapeutic doses, and since the risks associated with malaria are great, there is no debate about its use (Luzzi and Peto 1993)
- Quinine's main adverse effect in pregnancy is hypoglycaemia. Quinine may be oxytocic, but this effect may also be due to the malaria itself. The incidence of teratogenesis is unknown, although congenital abnormalities, notably eye and ear defects have been reported. With the doses used to treat malaria, the benefits of quinine therapy probably outweigh the risks. (Subramanian et al. 1992)
- When used in prophylactic doses, chloroquine (ADEC Category A) is known to be safe during pregnancy. When used in high doses and for prolonged periods, chloroquine (ADEC category D) and related substances may cause neurological disturbances and interference with hearing, balance and vision in the fetus

Clindamycin

- Clindamycin (ADEC Category A) has been used to treat chloroquine-resistant P. falciparum (10 mg / kg every 12 hours, orally or intravenously) either alone or in combination with quinine (Lell and Kremsner 2002)

Mefloquine

Directions for use

- The adult dosage is 250 mg (one tablet) once a week
- Take the first dose 1 week before arrival in the malaria-risk area
- Take your dose once a week, on the same day of the week, while in the risk area
- Take your dose once a week for 4 weeks after leaving the risk area
- Take the drug on a full stomach with a full glass of liquid

Side effects and warnings

- The most common side effects reported by travellers taking mefloquine include headache, nausea, dizziness, difficulty sleeping, anxiety, vivid dreams, and visual disturbances

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- Mefloquine has rarely been reported to cause serious side effects, such as seizures, depression, and psychosis. These serious side effects are more frequent with the higher doses used to treat malaria; fewer occurred at the weekly doses used to prevent malaria
- Mefloquine is eliminated slowly by the body and thus may stay in the body for a while even after the drug is discontinued. Therefore, side effects caused by mefloquine may persist weeks to months after the drug has been stopped

Adverse effects of uncomplicated malaria

- Anaemia is one of the principal adverse effects of uncomplicated malaria in pregnancy and all women with malaria should be screened for anaemia. If anaemia is detected iron and folic supplementation should be considered after completion of a course of antimalarials (RCOG draft 2009)

References

1. Stoll BJ. Neonatal infections: A global perspective. In: Remington JS, Klein JO, editors. Infectious diseases of the fetus and newborn infant. 5th ed. Philadelphia: WB Saunders; 2001.
2. Communicable Diseases Australia (CDA). Locally-acquired Plasmodium falciparum malaria on Darnley Island in the Torres Strait. Communicable Diseases Intelligence 2001; 25.
3. World Health Organisation (WHO). Guidelines for the treatment of malaria. Geneva, Switzerland: World Health Organisation; 2006. Available from URL: http://www.who.int/malaria/docs/TreatmentGuidelines2006.pdf
4. Garner P, Gülmezoglu AM. Drugs for preventing malaria in pregnant women. Cochrane Database of Systematic Reviews 2006, Issue 4. Art. No.: CD000169. DOI: 10.1002/14651858.CD000169.pub2. (Level I). Available from URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000169/pdf_fs.html
5. Luzzi GA, Peto TEA. 1993. Adverse effects of antimalarials: An update. Drug Safety 1993; 8: 295-311.
6. Subramanian D, Moise KJ, White AC. Imported malaria in pregnancy: Report of four cases and review of management. Clin Inf Dis 1992;15: 408-13.
7. Lell B, Kremsner PG. Clindamycin as an antimalarial drug: Review of clinical trials antimicrobial agents and chemotherapy 2002; 46: 2315-20.
8. Royal College of Obstetricians (RCOG). The treatment and prevention of malaria in pregnancy. Draft guideline no 2; March 2009.

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