

Ultrasound study provides first direct evidence of effect of malaria on fetal growth

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A study of almost 3,800 pregnancies has provided the most accurate and direct evidence to date that malaria infection reduces early foetal growth. Low birth weight is the most important risk factor for neonatal mortality in developing countries. The research, carried out on the border of Thailand and Myanmar (Burma), highlights the importance of preventing malaria in pregnancy.

According to the World Malaria Report 2011, malaria killed an estimated 655,000 people in 2010. It is caused by parasites such as *Plasmodium falciparum* and [Plasmodium vivax](#) that are injected into the bloodstream by infected mosquitoes.

Malaria is one of the most common [parasitic infections](#) to affect pregnancy. Previous studies have suggested that infection with both *P. falciparum* and *P. vivax* malaria during pregnancy reduces birth weight whether or not maternal symptoms are present. However, these studies have been hampered by difficulties in estimating [gestational age](#) accurately and diagnosing [malaria infection](#) in [early pregnancy](#)

Now, in a study published in the open access journal [PLoS One](#), researchers at the Shoklo Malaria Research Unit on the border of Thailand and Myanmar, part of the Wellcome Trust-Mahidol University-Oxford University [Tropical Medicine](#) Research Programme, have used ultrasound scans to provide the first direct evidence of the effect of malaria on foetal growth in pregnancies.

Antenatal ultrasound, which is essential for dating pregnancy accurately, is becoming more widely available in developing countries. The technology also allows doctors or locally trained workers to measure the diameter of the foetus's head. For infections that occur in early pregnancy, the researchers believe that the size of the head may be the most appropriate indicator of growth restriction.

The ultrasound scans revealed that the diameter of the average foetus's head was significantly smaller when malaria infection occurred in the first half of pregnancy when compared to pregnancies unaffected by malaria. On average, at the mid-pregnancy ultrasound scan the foetuses' heads were 2% smaller when affected by malaria. Even a single infection of treated *P. falciparum* or *P. vivax* malaria was associated with reduced foetal head diameter, irrespective of whether the woman had shown symptoms or not.

However, although a single early detected and well-treated malaria episode had an effect on foetal head size at mid-trimester, this was not seen at delivery, suggesting that early treatment with effective drugs may allow for growth to recover later in pregnancy.

"By using antenatal ultrasound screening, we have provided clear evidence that malaria infection affects the growth of a child in the womb, even when the infection is caught early and treated. This can increase the risk of miscarriage and affect the child's health in later life," explains Dr Marcus Rijken, first author on the study.

"Strategies to prevent malaria in pregnancy have focused on the second half of pregnancy, when most of the foetal weight gain takes place, but our works suggests that we need to broaden our efforts to focus on the first trimester, too. We need to make sure that pregnant woman are educated about the risks of malaria in pregnancy and where possible in areas of high risk, offer preventative medication from early pregnancy

onwards."

More information: Rijken, MJ et al. Ultrasound Evidence of Early Fetal Growth Restriction after Maternal Malaria Infection. *PLoS One*; 9 Feb 2012.

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