

PERIPHERAL CYTOKINE PROFILES DURING PREGNANCY IN WOMEN EXPOSED TO *Plasmodium falciparum* INFECTION

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Background

The STOPPAM consortium conducted 2 longitudinal cohort studies in pregnant women in Benin and Tanzania in order to evaluate the immunopathological consequences of infections with *Plasmodium falciparum* during pregnancy. Certain placental cytokine / chemokine profiles have been shown to reflect poor pregnancy outcomes, including maternal anemia and low birth weight.

Methods

Here we quantified 5 cytokines in peripheral blood samples from 400 Beninese women. They were enrolled at ≤ 24 weeks of pregnancy and followed at each antenatal visit until delivery.

The amounts of IL4, IL5, IL10, IL12 and IFN- γ were determined by multiplex quantification using Becton Dickinson (BD) Cytometric Bead Array (CBA) technology to ensure the maximum detection sensitivity and reproducibility.

Between subgroups of women harboring *Plasmodium falciparum* infection, maternal anemia, preterm births, or low birth weight for gestational age, cytokine responses were compared for everyone at inclusion, antenatal visit and delivery. The distribution was also compared between women not infected during pregnancy, women infected only once during pregnancy (but not at delivery), and those infected at least twice during pregnancy.

Results

Amongst the 5 cytokines assessed, analysis showed that IL-10 was present at a significantly higher concentration in peripheral plasma of infected women than uninfected women. However, declining concentrations of both Th1 and Th2 cytokines were associated with infection at inclusion. With the exception of IFN- γ , the levels of cytokines were sharply increased in women infected at delivery independently of previous infections with a greater association of IL-10. Also, there were trends for lower levels of Th1 and Th2 cytokines as the number of infections during pregnancy increased.

At the time of writing, multivariate analyses of cytokine levels between groups of women with anemia at delivery, women with preterm birth babies and women with babies having a low birth weight for gestational age are ongoing.

Conclusion

Our data confirm the findings we have previously reported and strengthen the idea that IL-10 could be a useful diagnostic marker of *Plasmodium falciparum* infection during pregnancy.