

Normal pregnancy and pregnancy complicated with HIV infection are associated with decreased immune responses. Decreased immune responses manifested in reduced maternal CD4+ T cell counts have been associated with risk of having a child infected with HIV - which risk ranges between 25 and 45% (without intervention) in sub-Saharan Africa. Zidovudine (AZT), which has been the prophylactic drug of choice for MTCT since 1994, reportedly increases on immune reconstitution in pregnancy and the risk of MTCT are still not very clearly known.

A prospective, observational cohort study of women with and without HIV-1 infection was conducted in 7 rural health centres in Western Kenyan Districts of Busia, Siaya, Bondo and Kisumu. The study participants included 110 HIV-1 infected women (with their index infants) as well as 311 HIV-1 seronegative women as controls. The participants were enrolled at 16 weeks gestation and followed up through pregnancy and postnatally to determine quantitative changes of CD4+ and CD8+ T cells using immunocytometric methods. For the HIV-seropositive women, the profiles of CD4+ and CD8+ T cells were evaluated in relation to maternal AZT chemoprophylaxis and the index infant HIV infection status.

Specimen collection was done at 26 and 36 weeks of pregnancy, 3 and 6 months postpartum and 3 months intervals thereafter until 2 years postpartum. Early diagnosis of HIV-1 among infants was performed by genetic amplification of HIV-specific genes using polymerase chain reaction (PCR). Only women and infants (born to HIV-positive mothers) whose consecutive data was available after collection according to study protocol met the criteria for the present analysis.

HIV seronegative and seropositive women were similar with respect to their age groups and mean ages (HIV + ; 22.8 and 22.5 years) ($p > 0.005$). However, sero-positive women had low entry CD4+ T cells (413-cells /ul) compared to sero-negative ones (829 cells/ul) ($p < 0.001$). In HIV-sero-negative women, CD4+T cell levels remained fairly stable during pregnancy and postpartum, though not significantly. However, among the seropositive women, CD4+T cell levels increased steadily during pregnancy and reduced towards early antepartum levels (600 cell /ul) late after delivery. For the CD8+ T cell profiles, the two categories had an early increase and a relatively stable or moderately increasing levels postpartum.

When CD4+ T cell counts of HIV-1 infected women given AZT were assayed at week 24 of gestation through pregnancy to 10 weeks postpartum and stratified by HIV-1 infection status of the child, there was a general increase of cells in response to AZT paired t-test comparisons of CD4+ T cell changes in the two categories of HIV-infected women (HIV transmitters and non-transmitters) before and after AZT administration showed that the CD4+ T cell increase in response to AZT was significantly associated with lack of transmission of HIV-1 to child ($P = 0.035$).

Whereas it is expected that HIV-1 infection and pregnancy play a role in reducing immunity, the present study demonstrates that a rise in the CD4+ T cell counts following short AZT regimen now widely in resource-weak countries, may be evidence of active suppression of replication of HIV. On the strength of these findings, HIV-infected women who want to have children may be assured that pregnancy will not cause significant progression of their disease. It is, however, recommended that such women be given a regimen of antiretrovirals (ARVs) to help reduce the risk of MTCT of HIV-1