ABSTRACT

The impact of HIV infection on progesterone, systemic cytokines, and lymphocyte levels in advancing pregnancy remains unclear despite the reported abortions among HIV-infected women. Thus, the main objective of this study was to determine and compare the profiles of progesterone, systemic cytokines and blood lymphocyte counts in advancing pregnancies of HIV-infected and HIV-non-infected women population. In a longitudinal cohort study, 44 HIV-infected and 44 HIV-non-infected pregnant women were consecutively recruited at Academic Model Providing Accessible Treatment and Healthcare (AMPATH) and Moi Teaching and Referral Hospital (M.T.R.H) in Western Kenya. Progesterone was analyzed using Enzyme Linked Immuno-Sorbent Assay (ELISA) while flow cytometry method was used to analyze cytokines and lymphocytes. Categorical variables were analyzed using Pearson's Chi-Square test. The changes and differences in the outcomes were assessed using repeated measures analysis of variance and Wilcoxon two-sample tests, respectively. The mean change in progesterone during the second, and the third trimesters were significant (P<0.0001) compared to that of the first trimester in both groups. Among the HIV-positive women, significant mean change in IL-2 [in the second trimester (P=0.036) compared to first; in third trimester (P=0.003) compared to second trimester]; IL-6 [in the second trimester (P=0.029) compared to first trimester] and IL-4 [in the third trimester, (P=0.022) compared to second trimester] were different from what was observed among the HIV-negative women. The mean change in IFN-γ, TNF, and IL-10 were similar when compared between the two groups. Among the HIV-positive women, significant changes were observed in $CD8_+$ [in the third trimester compared to the first (P=0.005) and second (P=0.007) compared to the first trimester]. Similar mean changes in $CD3_+$, $CD4_+$, $CD19_+$, and $CD56/16_+$, was observed when compared between the two groups. In conclusion, the present study demonstrates that, HIV infection attributes to changes in progesterone, cytokines and lymphocytes as pregnancy advances. The present study recommends that, alongside $CD4_+$ and $CD8_+$ count progesterone, T_H1/T_H2 cytokines, $CD19_+$ and $CD56/16_+$ should be monitored during pregnancy among the HIV-infected women. The present findings are significant in that they provide a baseline for possible use of cytokines in supplementation therapy. Future research should focus and explore on the succinct roles of the endocrine response in regard to other reproductive hormones, other cytokines not considered in the present study and the use of animal model to understand dynamics of lymphocyte counts without anti-retroviral treatment during pregnancy in HIV-infected women.