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Evaluation of Cytokine Profiles within the Endocervical Tract of HIV-1 Infected Females

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Evaluation of Cytokine Profiles within the Endocervical Tract of HIV-1 Infected Females

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Identifying novel biomarkers early during HIV-1 infection may provide valuable insight into a patient's prognosis and treatment options, especially in geographical areas with low resources. Cytokines, as well as chemokines, define classes of proteins responsible for local and systemic signaling between cell populations of the immune system. During viral infections, cytokines recruit and activate immune cell defense mechanisms against invading pathogens. Upon HIV-1 infection, the virus can enter in the endocervical tract. At this site, it is unknown which cytokines are secreted to mount an immune response and subsequently attract monocytes. Using Luminex MagPix assays, we examined endocervical cytokine profiles obtained from cervical swabs of HIV-1 infected women (n = 20) from the Uganda GS Cohort. This longitudinal cohort of HIV-1 infected Ugandan and Zimbabwean women includes individuals infected with HIV-1 subtypes A, C, and D and follows the timeline of disease progression from infection to CD4+ T cell decline, requiring the administration of antiretroviral therapy following World Health Organization guidelines. We correlated cytokine levels to the viral load within the endocervical tract at a time point below 60 days post infection. Of the 14 cytokines measured: interferon gamma, monocyte chemoattractant protein 1, macrophage inflammatory protein and C-X-C motif chemokine 10 positively correlated to viral load within the endocervical tract. Interestingly, these cytokines have clinical significance as they are involved in inflammation, macrophage recruitment and response to viral infection. Overall, our results demonstrate a relationship between HIV disease progression with early endocervical cytokine profiles involved in pro-inflammatory and chemotactic responses.