

Abstract

Studies using genital tissue samples from HIV-infected women might provide important information about HIV susceptibility and transmission. In this study, ectocervical biopsies were obtained from 20 HIV-seropositive (HIV(+)) Kenyan female sex workers (FSW) and 20 HIV-seronegative lower risk (HIV(-) LR) women. To control for the impact of sex work, 20 HIV(-) FSW were also recruited. Immune molecules were assessed in situ by immunohistochemistry and for mRNA expression by quantitative PCR. The HIV(+) women were reportedly infected for a median of 3 y (1-21 y), with a median viral load of 11,735 copies/ml (20-648,000 copies/ml). These women had significantly lower CD4 blood cell counts than the HIV(-) LR women but comparable levels of CD4 expression in ectocervix. Whereas cellular markers were similar between the HIV(+) group and the HIV(-) LR women, the HIV-binding molecules CCR5, dendritic cell-specific intercellular adhesion molecule-3-grabbing nonintegrin, and mannose receptor as well as the inflammatory markers CD69, IFN- γ , IL-6, and IL-22 were significantly upregulated in the HIV(+) group. As compared with the HIV(-) FSW women, the HIV(+) women had significantly upregulated levels of CD4, CD3, CCR5, Langerin, dendritic cell-specific intercellular adhesion molecule-3-grabbing nonintegrin, and mannose receptor as well as inflammatory cytokines. The CD4 cell depletion previously seen in the gut mucosa of HIV-infected individuals was thus not observed in the ectocervical mucosa. Stable CD4 cell expression and local immune activation in the lower female genital tract may promote viral replication and genital shedding and increase the risk of sexual HIV transmission.