Initiation of antiretroviral therapy leads to a rapid decline in cervical and vaginal HIV-1 shedding.

Abstract:

BACKGROUND: Antiretroviral therapy (ART) may decrease HIV-1 infectivity in women by reducing genital HIV-1 shedding. OBJECTIVES: To evaluate the time course and magnitude of decay in cervical and vaginal HIV-1 shedding as women initiate ART. METHODS: This prospective, observational study of 20 antiretroviral-naive women initiating ART with stavudine, lamivudine, and nevirapine measured HIV-1 RNA in plasma, cervical secretions, and vaginal secretions. Qualitative polymerase chain reaction estimated HIV-1 DNA in cervical and vaginal samples. Perelson's two-phase viral decay model and non-linear random effects were used to compare RNA decay rates. Decreases in proviral DNA were evaluated using logistic regression and generalized estimating equations. RESULTS: Significant decreases in the quantity of HIV-1 RNA were observed by day 2 in plasma (P < 0.001), day 2 in cervical secretions (P = 0.001), and day 4 in vaginal secretions (P < 0.001). Modeled initial and subsequent RNA decay rates in plasma, cervical secretions, and vaginal secretions were 0.6, 0.8, and 1.2 log10 virions/day, and 0.04, 0.05, and 0.06 log10 virions/day, respectively. The initial decay rate for vaginal HIV-1 RNA was more rapid than for plasma RNA (P = 0.02). Detection of HIV-1 DNA decreased significantly in vaginal secretions during the first week (P < 0.001). At day 28, 10 women had detectable HIV-1 RNA or proviral DNA in genital secretions. CONCLUSIONS: Genital HIV-1 shedding decreased rapidly after ART initiation, consistent with a rapid decrease in infectivity. However, incomplete viral suppression in half of these women may indicate an ongoing risk of transmission.