

Antiretroviral treatment interruptions predict female genital shedding of genotypically resistant HIV-1 RNA

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Abstract:

Objectives: Resistant viruses may emerge in the female genital tract during antiretroviral therapy (ART). Our objective was to identify predictors of drug-resistant HIV-1 RNA in genital secretions after initiation of nonnucleoside reverse transcriptase inhibitor-based therapy. **Design:** We conducted a prospective cohort study with periodic evaluation of plasma and genital swab samples for HIV-1 RNA levels and antiretroviral resistance mutations. **Methods:** First-line ART was initiated in 102 women. Plasma and genital HIV-1 RNA levels were measured at months 0, 3, 6, and 12. Genotypic resistance testing was performed for samples from all participants with RNA >1000 copies per milliliter at month 6 or 12. Cox regression analysis was used to identify factors associated with incident genital tract resistance. **Results:** Detectable genital tract resistance developed in 5 women, all with detectable plasma resistance (estimated incidence, 5.5/100 person-years of observation). Treatment interruption >48 hours, adherence by pill count, adherence by visual analog scale, and baseline plasma viral load were associated with incident genital tract resistance. In multivariate analysis, only treatment interruption was associated with risk of detectable genital tract resistance (adjusted hazard ratio: 14.2; 95% confidence interval: 1.3 to 158.4). **Conclusions:** Treatment interruption >48 hours during nonnucleoside reverse transcriptase inhibitor-based therapy led to a significantly increased risk of detecting genotypically resistant HIV-1 RNA in female genital tract secretions. Patient- and program-level interventions to prevent treatment interruptions could reduce the risk of shedding-resistant HIV-1 during ART