ARV DRUG USE AND HIV DRUG RESISTANCE AMONG YOUNG WOMEN IN SOUTH AFRICA (HPTN 068)

Yinfeng Zhang1, Mariya V. Sivay1, Sarah E. Hudelson1, Jing Wang2, Yaw Agyei1, William Clarke1, Autumn Breaud1, Erica L. Hamilton2, Kathleen Kahn2, Xavier Gomez-Olive2, Catherine MacPhail2, James P. Hughes2, Audrey Pettifor2, Susan H. Eshleman2, for the HPTN 068 Study Team

1The Johns Hopkins University, Baltimore, MD, USA 2Statistical Center for HIV/AIDS Research and Prevention, Seattle, WA, USA 3YHI 360, Durham, NC, USA 4University of the Witwatersrand, Johannesburg, South Africa 5University of Wollongong, Wollongong, Australia 6University of Washington, Seattle, WA, USA 7University of North Carolina Chapel Hill, Chapel Hill, NC, USA

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Background

Antiretroviral (ARV) drugs are widely used for HIV treatment and prevention, and may be used for other reasons in some populations. We analyzed ARV drug use and HIV drug resistance among young women enrolled in the HIV Prevention Trials Network (HPTN) 068 study. Young women in sub-Saharan Africa have significantly higher rates of HIV infection and acquire HIV infection at a younger age than their male peers. HPTN 068 was conducted in rural northeast South Africa and evaluated the impact of cash transfer on HIV incidence conditional on high school attendance (study period: 2011-2015).

Methods

Study Cohort

In HPTN 068 (main study), young women were enrolled in high school and were tested for HIV infection annually until their expected graduation. Some participants had one additional post-graduation follow-up visit after exiting from the main study (follow-up study).

In this study, we analyzed two sample sets:
1. Enrollment sample (5,256 women: 80 HIV infected; 2,446 HIV uninfected)
2. Samples from the first HIV-positive visit (162 seroconverters; 107 in the main study, 55 in the follow-up study).

ARV Drug Testing

ARV drug testing was performed using a qualitative assay based on high-performance liquid chromatography coupled with high-resolution accurate-mass spectrometry. This assay detects 20 ARV drugs from five drug classes:
- Nine protease inhibitors (PIs)
- Six nucleoside/nucleotide reverse transcriptase inhibitors (NNRTIs)
- Three non-nucleoside reverse transcriptase inhibitors (NNRTIs)
- One CCR5 receptor antagonist
- One integrase strand transfer inhibitor

HIV Drug Resistance Testing

HIV genotyping was performed using the ViroSeq HIV-1 Genotyping System v2.8 (Abbott Molecular, Des Plaines, IL) for samples with HIV viral loads >400 copies/mL.

Results

Figure 1. Detection of ARV drugs and HIV drug resistance in women at study enrollment.

Figure 2. Detection of ARV drugs and HIV resistance testing in seroconverters.

Table 1. ARV drugs and HIV drug resistance in women at study enrollment.

Table 2. ARV drug use and HIV drug resistance in seroconverters.

The association of demographic, laboratory, and clinical factors with detection of ARV drugs and HIV drug resistance was examined; factors included age, viral load, CD4 cell count, infection group, pregnancy history, food insecurity, school attendance, depression, alcohol use, and orphanhood.

• ARV drugs was detected more frequently in women who had a lower viral load at their first HIV-positive visit (p<0.0001).

• ARV drugs were also detected more frequently in women who had two deceased parents (double orphans) compared to those who had two living parents (27.8% vs. 10.5%, p<0.04).

The only factor associated with HIV drug resistance was having one parent deceased, compared to having two living parents (p=0.04). The proportion of women who had viral loads <400 copies/mL (below the cutoff for drug resistance) was similar for those with two living parents vs. one or no living parents (p=0.45).

Conclusions

ARV drug use was not detected among HIV-uninfected women in this cohort from rural South Africa.

ARV drug use was relatively infrequent among women with prevalent infection (12.5%) and incident infection (9.9%). Among the women who were using ARV drugs, many were not virally suppressed and many had HIV drug resistance; this suggests a need for broader HIV/AIDS education and ART counseling in the study communities.

It was not possible to determine if the low rate of ARV drug use in this cohort reflected lack of knowledge of HIV status or other factors.

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