Antiretroviral Drug Resistance Among HIV-infected Black Men who Have Sex with Men in the US

Abstract 211 / Poster 581
Iris Chen
720 Rutland Avenue, Ross Building, Room 646
Baltimore, MD 21205, USA
email: ichen@jhmi.edu

Iris Chen[1], Vanessa Cummings[1], Lei Wang[2], Matthew B. Connor[2], Mark A. Marzinke[1], Sheldon D. Fields[3], Darrell P. Wheeler[4], Kenneth H. Mayer[5,6], Beryl A. Koblin[7], and Susan H. Eshleman[1] for the HPTN 061 Study Team

[1] Johns Hopkins Univ. School of Medicine, Baltimore, MD, [2] Statistical Center for HIV/AIDS Research and Prevention, Seattle, WA, [3] Florida International Univ., Miami, FL, [4] Loyola Univ. Chicago, Chicago, IL, [5] The Fenway Institute, Boston, MA, [6] Harvard Medical School, Boston, MA, [7] New York Blood Center, New York, NY.

Background

In the United States (US), Black men who have sex with men (MSM) are disproportionately affected by HIV. Understanding the prevalence and patterns of antiretroviral (ARV) drug resistance among Black MSM is important since ARV drug resistance can complicate treatment options and lead to treatment failure. We analyzed ARV drug resistance in men from the HIV Prevention Trials Network (HPTN) 061 study [1, 2]. The HPTN 061 study enrolled both HIV-infected and HIV-uninfected Black MSM in six US cities and is the largest longitudinal cohort of Black MSM in the US to date.

Methods

Study Cohort

The HPTN 061 study enrolled 1,553 Black MSM in six US cities, including 348 men who were HIV infected at enrollment [1, 2]. Follow-up visits occurred 6 and 12 months after enrollment. HIV testing was performed at each visit; 28 men seroconverted during the one-year study follow-up.

Laboratory Methods

HIV genotyping was performed retrospectively using the ViroSeq HIV Genotyping System. HIV-infected men with a viral load >400 copies/mL at the enrollment (N=171) or seroconversion (N=23) visit were genotyped (Figure 1). Samples were also tested for the presence of ARV drugs.

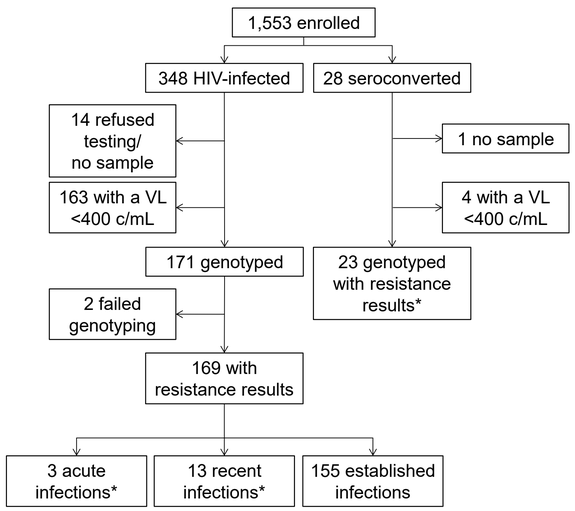
Statistical Methods

Individuals who had drug-resistant HIV were compared to those who did not using Fisher's Exact or χ^2 tests. A P-value <0.05 was considered statistically significant.

Results

Genotyping results were obtained for 169 men who were HIV infected at enrollment and 23 seroconverters (Figure 1). The men who were HIV infected at enrollment included three who were acutely infected and 13 who were classified as recently infected by a multi-assay algorithm, which uses both serologic and non-serologic assays to identify recent HIV infections [3].

Figure 1. Study cohort



* Men classified as newly HIV infected.

ARV drug resistance was detected in HIV from 48 (28.4%) of the 169 men who were HIV infected at enrollment. Nineteen (11.2%) men had HIV that was resistant to multiple ARV drug classes; two (1.2%) had HIV that was resistant to all three drug classes analyzed (NRTIs, NNRTIs, and PIs).

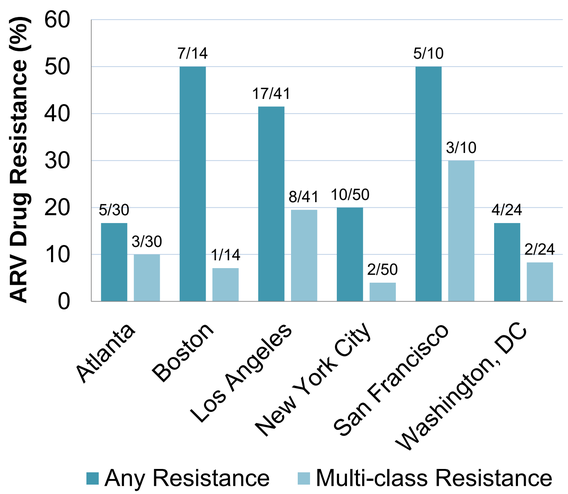
ARV drug testing revealed that some of the men who had drug-resistant HIV were on failing ARV treatment regimens (data not shown).

Results

We analyzed factors associated with ARV drug resistance and multi-class drug resistance at enrollment. These factors included: city, age, income, employment status, education, healthcare, drug use, and number of male sexual partners.

The prevalence of ARV drug resistance varied significantly by city (P=0.01, Figure 2). Boston and San Francisco had the highest prevalence (50.0% for both), followed by Los Angeles (41.5%), New York City (20.0%), Atlanta (16.7%), and Washington, DC (16.7%).

Figure 2. ARV drug resistance prevalence by city



ARV drug resistance and multi-class resistance were more common among men >30 years of age (P=0.02 and P=0.001, respectively). No other factors were associated with ARV drug resistance.

Results

Men were classified as newly HIV infected if they were acutely or recently infected at the time of study enrollment or if they seroconverted during the study (Figure 1). ARV drug resistance in this subset of men may be due to transmitted drug resistance or exposure to ARV drugs for pre- or post-exposure prophylaxis.

ARV drug resistance was detected in HIV from nine (23.1%) of the 39 newly-infected men. Due to the small sample size, further statistical analyses were not performed.

Conclusions

ARV drug resistance is common among Black MSM in the US.

- In three of the cities studied, >40% of the men had drug-resistant HIV.
- Overall, 11.2% of the men had HIV with multi-class drug resistance.
- Nearly a quarter of newly-infected men had drug-resistant HIV.

These findings underscore the importance and urgency of scaling up culturally appropriate and acceptable programs to engage Black MSM in care and promote adherence to ARV treatment.

Acknowledgements

The authors thank the HPTN 061 study participants and study team for providing the samples and data used in this study.

References

[1] Koblin et al. PLOS One. 2013; 8:e70413.
[2] Mayer et al. PLOS One. 2014; 9:e87298.
[3] Brookmeyer et al. Am J Epidemiol. 2013; 177:264-272.