Prevalence and Incidence of HIV Intraclade Co- and Superinfection

Mary Pacold1, Susan Little1, Eric Daar2, Caroline Ignacio1, Sherry Rostami1, Parris Jordan1, Douglas Richman3, and Davey Smith1,2
1University of California, San Diego, CA, USA; 2University of California, Los Angeles, CA, USA; 3San Diego Veterans Affairs Healthcare System, San Diego, CA, USA

Background
Infection with more than one strain of HIV (dual infection) can occur before an immune response has been mounted (coinfection) or after the first month of infection (superinfection). Using techniques more sensitive than previous studies [1], we aimed to better characterize the rates of dual infection.

Objective
To determine the prevalence of coinfection and the incidence of superinfection within a Southern California primary infection cohort.

Methods
We extracted HIV RNA from blood plasma and performed population-based pol sequencing at two time points for 120 antiretroviral-naive participants from the Southern California primary infection cohort. Similar to previous reports [2], we ranked sequences for likelihood of dual infection according to the number of synonymous mixtures normalized by the ranked sequences for likelihood of dual infection according to primary infection cohort. Similar to previous reports [2], we aimed to better characterize the rates of dual infection.

Results
Within the 11 highest smindex samples, 8 previously unrecognized and unreported cases of dual infection were detected. The overall dual infection prevalence in the cohort was 10%. The average genetic distances between the dually infecting strains were 17% in C2-V3 and 6% in RT (compared to 1% in C2-V3 and 0.8% in RT within monoinfected populations). Three participants were coinfected in the baseline sample (1.5, 1.5, and 6 months after estimated date of infection).

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Conclusions
• A 10% prevalence of dual infection was documented. This report demonstrates a superinfection prevalence of triple the previous estimate for this cohort.
• Common methods for identifying intraclade dual HIV infections lack the required sensitivity to accurately estimate its true prevalence.
• Detection of dual infection frequently requires examination of both genomic regions.
• These more accurate rates of dual infection could be used to better inform public health agencies, care providers, and HIV-infected people on the risks of HIV co- and superinfection.

References