Surveillance of HIV Recent Infection and Transmitted Drug Resistance of HIV-1 Strains from Newly-diagnosed, Treatment-naïve Persons in a Singaporean Cohort

Carmen Low[1*], Meng Li Teo[1], Yan Yan Liu[1], Lin Cui[1], Raymond Lin[1]

[1.] National Public Health Laboratory, MOH

Background/Objective
HIV-1 recent infection and transmitted drug resistance screening was introduced in 2012 to enhance the existing HIV/AIDS surveillance program in Singapore. This study describes the newly-diagnosed HIV cases and prevalence of transmitted HIV-1 drug resistance (HIVDR) in individuals without prior antiretroviral therapy (ART) recruited from a public hospital.

Method
The study was carried out between 2012 and 2014 in newly diagnosed, treatment-naïve HIV-positive patients. The BED IgG capture incidence EIA (BED-CEIA assay) was used to determine recent infections. Resistance genotyping was obtained with ViroSeqTM HIV-1 genotyping system. Transmitted HIV drug resistance was defined according to the criteria by the World Health Organization 2009 list of surveillance drug resistance mutations. Demographic and clinical data were also gathered.

Result
A total of 381 patients; 65 patients with recent and 316 patients with chronic HIV-1 infection were included in the analysis. MSM behaviour and non-subtype B were more frequently observed in recent HIV-1 infections. The overall prevalence of transmitted HIVDR was 3.4% (13/381). Recently infected patients had a higher prevalence of transmitted HIVDR (7.7% vs. 2.5%, $p = 0.47$) and frequencies of transmitted drug resistance mutations (TDRMs) to nucleoside reverse transcriptase inhibitors (NRTIs) and non-NRTIs (NNRTIs) inhibitors (3.1% vs. 1.6%, $p<0.001$ and 4.6% vs. 0.3%, $p = 0.12$ respectively). Among those with recent infection, the most common TDRM to NNRTIs was K103N (3.1%). Of patients with chronic infection, M41L and D67N/E (0.6%) were the most common TDRMs to NRTIs.

Conclusion
The prevalence of transmitted HIVDR to any class of antiretroviral agents was higher between those who were recently infected with HIV than those who had chronic infection in our cohort. MSM appear to be the most high-risk group in recent infections, and could benefit from enhanced prevention interventions.