Development of phenotypic and genotypic resistance to antiretroviral therapy in the UNAIDS HIV drug access initiative – Uganda

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Objective: We describe phenotypic drug resistance, response to therapy, and genotypic mutations among HIV-infected patients in Uganda taking antiretroviral medications for ≥ 90 days who had a viral load ≥ 1000 copies/ml.

Methods: HIV-1 group and subtype, virologic and immunologic responses to antiretroviral therapy, phenotypic resistance to antiretroviral drugs, and associated genotypic mutations among patients at three treatment centers in Uganda between June 1999 and August 2000 were assessed. Therapy was two nucleoside reverse transcriptase inhibitors (NRTIs) or highly active antiretroviral therapy (HAART).

Results: All HIV identified was HIV-1, group M, subtypes A, C, and D. Sixty-one (65%) of 94 patients with a phenotypic resistance result had evidence of phenotypic resistance including resistance to a NRTI for 51 of 92 (55%) taking NRTIs, to a non-nucleoside reverse transcriptase inhibitor (NNRTI) for nine of 16 (56%) taking NNRTIs, and to a protease inhibitor (PI) for eight of 37 (22%) taking PIs. At the time of the first specimen with resistance, the median change from baseline viral load was –0.56 log copies/ml [interquartile range (IQR), –1.47 to +0.29] and CD4+ cell count was $+35 \times 10^6$ cells/l (IQR, –18 to +87). Genotypic resistance mutations, matched with phenotypic resistance assay results and drug history, were generally consistent with those seen for HIV-1, group M, subtype B infections in industrialized countries.

Conclusion: Initial phenotypic resistance and corresponding genotypic mutations among patients treated in Uganda were similar to those with subtype B infections in North America and Europe. These data support policies that promote the use of HAART regimens against HIV-1, group M, non-B subtypes in a manner consistent with that used for subtype B infections.

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