Efficient monitoring of HIV-1 vertically infected children in Kenya on first-line antiretroviral therapy

Lihanaa, Raphael W; Lwembe, Raphael M; Bi, Xiuqiong; Ochieng, Washingtone; Panikulam, Annie; Palakudy, Tresa; Musoke, Rachel; Owens, Mary; Ishizaki, Azumi; Okoth, Frederick A; Songok, Elijah M; Ichimura, Hiroshi

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Abstract

Background Worldwide access to antiretroviral therapy (ART) in low- and middle-income countries has significantly increased. Although this presents better treatment options for HIV-infected individuals, the challenge of monitoring ART in these settings still remains. Objective To investigate efficient and cost-effective criteria for assessing ART failure among HIV-1-infected children on first-line ART in resource-limited settings. Study design Retrospective analysis of 75 HIV-1 vertically infected Kenyan children with a follow-up period of 24 months after initiating ART. Plasma viral load, peripheral CD4+T-cell counts and HIV-1 drug-resistance mutations were monitored biannually. Results Plasma viral load (VL) was suppressed to undetectable level or more than 1.5 log10 from baseline levels in 53 (70.7%) children within 24 months. VL in the remaining 22 (29.3%) children was not suppressed significantly. Of the 22 children, 21 were infected with HIV-1 strains that developed drug-resistance mutations; 9 within 12 months and 12 between 12 and 24 months. Among the 53 who were successfully treated, VL was suppressed in 33 within 12 months and in 20 between 12 and 24 months. There was no significant difference in VL at baseline and the change of CD4+T-cell counts after initiating ART between those treated successfully and the failure groups. Conclusion After initiating ART, children may require longer times to achieve complete viral suppression. Plasma viral load testing 24 months after initiating ART could be used to differentiate ART failures among HIV-1 vertically infected children in resource-limited settings. Additionally, drug resistance testing, if affordable, would be helpful in identifying those failing therapy and in choosing second-line regimens.