

THE EFFECT OF SHORT-TERM ZIDOVUDINE TREATMENT ON SELECTION OF HIV-1 DURING VERTICAL TRANSMISSION

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Abstract

We have shown that short-term prenatal zidovudine (ZDV) treatment successfully prevented vertical transmission by 67% even in rural Kenya. However, the generation of ZDV resistant variants and their transmission to infants has been reported during the long-term ZDV treatment. The aim of this study was to investigate whether short-term ZDV treatment induced ZDV resistant variants and/or selection where intervention failed.

Blood samples collected from six HIV-1 positive mothers (3 ZDV-treated and 3 non-ZDV treated) and their infected infants, and genomic DNA was extracted from PBMCs. Proviral DNA was amplified by nested PCR by pol primers covering the reverse transcriptase (RT) gene, and the products cloned. From each sample 20 clones were sequenced and phylogenetically analyzed by the neighbor-joining method. Point mutations were observed in four mother sequences (KS051, KS012, KS006, and BU069) and one child sequence at points associated with ZDV resistance. Selective (single) transmission of HIV-1 strains from mother to infant was observed in both treatment and non-treatment groups. In one case the viral diversity of the infant was higher than the mother's. Two mothers were dually infected but transmitted only one variant to the infant. From our observations, we conclude that short-term ZDV treatment did not induce any known ZDV resistant mutants nor select for their transmission to the infants. Selection of HIV-1 variants during vertical transmission may not be due to short-term ZDV treatment, but the diversity of mother's viral population.