Abstract

A switch of coreceptor usage from CCR5 to CXCR4 occurs in about half of HIV-1-infected individuals in the natural course of infection. To investigate whether antiretroviral therapy (ART) enhances the coreceptor switch of HIV-1, we genotypically analyzed the env-V3 amino acid sequences from 81 HIV-1-infected children in Kenya whose plasma samples were obtained between 2000 and 2007. Of 41 children on ART, 35 had HIV-1 using CCR5 as a coreceptor at baseline. In 7 (20%) of them HIV-1 switched the coreceptor usage during the follow-up period. The mean duration of ART to the time of coreceptor switch was 2.6 years (range: 0.5-5.2). Of the remaining 40 children without ART, 32 had HIV-1 using CCR5 as a coreceptor at baseline and in 3 (9.4%) HIV-1 switched the coreceptor usage. The mean age of the children with HIV-1 coreceptor switch with and without ART was 7.3 and 9.7 years, respectively. The difference in the rate and age of coreceptor switch between treated and untreated children was not significant (p = 0.38 and 0.31, respectively). Of the HIV-1-infected children, 10 started ART by the age of 5 years (rapid progressors) and 23 did not need ART by the age of 10 years (slow progressors). The rate of coreceptor switch was strongly higher in rapid progressors (40%) than slow progressors (8.7%) (p = 0.053). These results suggest that switching of coreceptor usage from CCR5 to CXCR4 among HIV-1-infected children is not influenced by ART, but by factors responsible for rapid disease progression.