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.