LL-37 concentrations and the relationship to vitamin D, immune status, and inflammation in HIV-infected children and young adults.

Antimicrobial peptide LL-37 is produced in response to active vitamin D to exert immunomodulatory effects and inhibits HIV replication in vitro. To date, no studies have investigated LL-37 in HIV-infected patients. This study sought to investigate LL-37 and the relationship to 25-hydroxyvitamin D [25(OH)D] and HIV-related variables in this population. HIV-infected subjects and healthy controls ages 1-25 years old were prospectively enrolled in this cross-sectional study. Fasting plasma LL-37 and 25(OH)D concentrations were measured in duplicate with ELISA. HIV(+) subjects (36 antiretroviral therapy (ART)-experienced subjects; 27 ART-naive subjects) and 31 healthy controls were enrolled. Overall, 93% were black and the median age was 20 years. There was no difference in median (interquartile range) LL-37 between the HIV-infected group and controls [58.3 (46.4,69.5) vs. 51.3 (40.8,98.2) ng/ml, respectively; p=0.57]; however, the ART-experienced group had higher concentrations than the ART-naive group [66.2 (55.4,77.0) vs. 48.9 (38.9,57.9) ng/ml, respectively; p<0.001]. LL-37 was positively correlated with 25(OH)D in controls, but not in HIV-infected groups, and was positively correlated with current CD4 and ΔCD4 (current-nadir) in the ART-experienced group. After adjustment for age, race, sex, and HIV duration, the association between LL-37 and CD4 remained significant. These findings suggest that HIV and/or HIV-related variables may alter the expected positive relationship between vitamin D and LL-37 and should be further investigated.