Retrovirology

Poster presentation

P16-05. Upregulation of PD-1 and CTLA-4 on HIV-specific T cells in HIV-infected infants

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Background

Although virus-specific CD8+ T cells have been detected in HIV-infected infants at birth, little is known about their function. Expression of the negative regulatory molecules PD-1 and CTLA-4 on specific T cells in HIV-infected adults is associated with T cell exhaustion and disease progression. We hypothesized that PD-1 and CTLA-4 are also upregulated on specific T cells in HIV-infected infants.

Methods

Twenty HIV+ infants, 25 HIV-exposed uninfected (EU) infants and 25 unexposed uninfected (HIV-) infants from Worcester, South Africa were recruited. Blood was collected at 3, 6, 9 and 12 months of age; none of the infants were on ARV, as the study was completed prior to routine availability in South Africa. Expression of PD-1 and CTLA-4 was measured by flow cytometry on total T cell populations, and on IFN-gamma-producing HIV-specific T cells, following incubation of blood with recombinant vaccinia viruses expressing Gag and Env. Results were analyzed statistically using the non-parametric Mann-Whitney test.

Results

Gag-specific CD4+ T cells and Gag and Env-specific CD8+ T cell responses were detected from as early as 3 months of age in HIV-infected infants. No responses were detected in EU and HIV-infants. PD-1 and CTLA-4 expression on total CD8+ T cells in HIV+ infants was higher than in the EU and HIV-groups, and much more markedly so on HIV-specific IFN-gamma-producing CD4+ and CD8+ T cells.

Conclusion

The immunoregulatory receptors PD-1 and CTLA-4 are upregulated on HIV-specific CD4+ and CD8+ T cells in HIV infected infants not on ARV. Further studies are necessary to determine the relationship between PD-1 and CTLA-4 expression and HIV-specific T cell dysfunction and disease progression in infants.