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Oral presentation

S03-05 OA. A less differentiated memory phenotype of Gag-specific CD4+ T-cells during primary HIV infection associates with viral control at 12 months

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Background

This work investigates the association of CD4+ T-cell activation and memory maturation during primary HIV infection with viral control during the first year of infection. We hypothesize that an early accumulation of central/transitional memory CD4 cells associates with succeeding viral control.

Methods

We examined a cohort of 15 subtype C HIV-infected subjects identified during primary HIV-1 infection (PHI). Polychromatic flow cytometry was used to simultaneously analyze activation and memory maturation profiles in total and antigen-specific CD4+ T cells. Isolated PBMC from each subject were stimulated for 6 h with Gag, CMV (pp65) or Ad5 Hexon peptide pools and labeled with a cocktail of monoclonal antibodies to CD3, CD4, CD8, CD45RO, CD27, HLA-DR, CD38, Ki-67, IFNγ and IL-2.

Results

Our results show that HIV Gag-specific CD4+ T-cells are characterized by high level of activation that is not observed total memory or non-HIV specific cells. The frequency of central/transitional memory (CD27+CD45RO+) CD4+ T cells expressing CD38+HLA-DR+Ki67+ was significantly higher on Gag-specific compared to total memory CD4+ cells (p = 0.0392) at 3 months post infection. The frequency of these cells negatively correlated with viral load (r = -0.65, p = 0.021) at 12 months. Conversely, activated Gag-specific effector memory (CD27-CD45RO+) CD4+ T-cells at 3 months positively correlated with viral load (r = 0.63, p = 0.028) at 12 months.

Conclusion

These data show that activated and less differentiated Gag-specific memory CD4+ T-cells during PHI may play a key role in control of vireamia during the first year of infection.