Retrovirology

Poster presentation

P16-48. Immunologic and virologic characterization of an ART-treated HIV-1 patients cohort with long-term control of viremia

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Background

Long-term treatment of primary HIV-1 infection (PHI) may allow the immune reconstitution of responses lost during the acute viremic phase and decrease of peripheral reservoirs. This in turn may represent the best setting for the use of therapeutic vaccines in order to lower the viral set-point or control of viral rebound upon ART discontinuation.

Methods

We investigated a cohort of 16 patients who started ART at PHI, with treatment duration of ≥4 years and persistent aviremia (<50 HIV-1 copies/ml). The cohort was characterized in terms of viral subtype, cell-associated RNA, proviral DNA and HLA genotype. Secretion of IFN-γ, IL-2 and TNF-α by CD8 T-cells was analysed by polychromatic flowcytometry using a panel of 192 HIV-1-derived epitopes.

Results

This cohort is highly homogenous in terms of viral subtype: 81% clade B. We identified 44 epitope-specific responses: all patients had detectable responses to >1 epitope and the mean number of responding epitopes per patient was 3. The mean frequency of cytokines-secreting CD8 T-cells was 0.32%. CD8 T-cells secreting simultaneously IFN-γ, IL-2 and TNF-α made up for about 40% of the response and cells secreting at least 2 cytokines for about 80%, consistent with a highly polyfunctional CD8 T-cell profile. There was no difference in term of polyfunctionality when HLA restriction, or recognized viral regions and epitopes were considered. Proviral DNA was detectable in all patients but at low levels (mean = 108 copies/1 million PBMCs) while cell-associated mRNA was not detectable in 19% of patients (mean = 11 copies/1 million PBMCs when detectable).

Conclusion

Patients with sustained virological suppression after initiation of ART at PHI show polyfunctional CD8 T-cell and low levels of proviral DNA with an absence of residual replication in a substantial percentage of patients. The use of therapeutic vaccines in this population may promote low level of rebound viremia or control of viral replication upon ART cessation.