RETROVIROLOGY

POSTER PRESENTATION Open Access

Naive CD8+ T cells from ART respond to primary vaccination against autologous HIV-1 antigen

Kellie N Smith[1*], Robbie B Mailliard[2], Weimin Jiang[2]

From 17th International Symposium on HIV and Emerging Infectious Diseases (ISHEID) Marseille, France. 23-25 May 2012

Introduction

Antiretroviral therapy (ART) decreases HIV-1 viremia and AIDS-associated mortality. Despite this, HIV infected patients are unable to clear virus during treatment interruption due to insufficient cytotoxic T cell (CTL) activity against the autologous reservoir. It is unclear if naïve T cells from patients on ART can respond to immunotherapies that induce CTL specific for their own, unique virus. Unfortunately, late-evolving virus and the ART reservoir contain escape epitope variants that confer a lack of CTL control. We hypothesize that a dendritic cell (DC)-based immunotherapy during ART can induce CTL capable of eliminating the autologous reservoir, despite their failure to do so during natural infection.

Materials and methods

We use a naïve T cell flow cytometry panel to evaluate changes in the naive CD4+:CD8+ T cell ratio before seroconversion, during untreated infection, and after ART in an HIV infected subject. We then use this panel to isolate naive CD4+ and CD8+ T cells from this patient during ART and from HIV negative donors. These purified naive T cells are then used in an in vitro model of dendritic cell (DC) vaccination at their in vivo ratios to induce primary IFNγ-producing CTL against autologous HIV-1 Gag, Env, and Nef peptide antigens derived from ART.

Results

Although partial immune reconstitution occurs during ART, we observed a disproportionate recovery in the naïve CD4+:CD8+ T cell ratio compared to pre-infection. Despite this, we show that naïve CD4+ and CD8+ T cells from ART, when primed at their skewed in vivo ratio against late-acquired, "escape" epitope variants, differentiate into IFNγ-producing CTL comparable to those induced in pre-seroconversion T cells. Additionally, we show that primary CTL responses induced during ART are comparable to those observed in HIV negative donors. Figure 1.

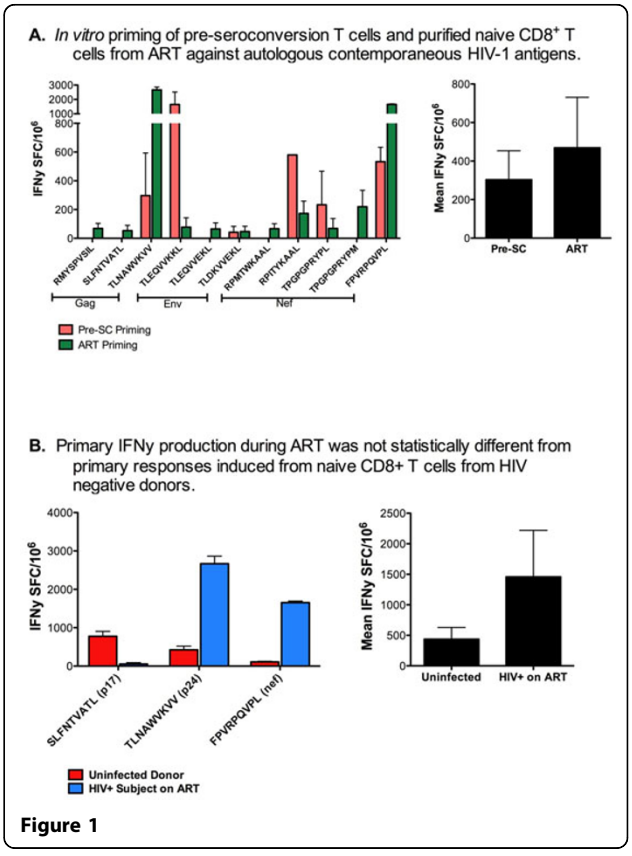

Figure 1

* Correspondence: kns27@pitt.edu
[1]University of Pittsburgh School of Medicine, Department of Molecular Virology and Microbiology, Pittsburgh, USA
Full list of author information is available at the end of the article

Conclusion

These data indicate that, despite a disproportionate recovery in the naive CD4+:CD8+ T cell ratio, DC vaccination of naïve T cells from ART can induce CTL specific for autologous "escape" HIV-1 variants, and that these naive T cells can respond to primary vaccination at a level similar to pre-infection. These data support the use of DC immunotherapies in HIV infected patients on ART.

Author details
[1]University of Pittsburgh School of Medicine, Department of Molecular Virology and Microbiology, Pittsburgh, USA. [2]University of Pittsburgh Graduate School of Public Health, Department of Infectious Diseases and Microbiology, USA.

Published: 25 May 2012

doi:10.1186/1742-4690-9-S1-P16
Cite this article as: Smith *et al.*: Naive CD8+ T cells from ART respond to primary vaccination against autologous HIV-1 antigen. *Retrovirology* 2012 **9**(Suppl 1):P16.