

Poster presentation

Open Access

PII-10. Modulation of intestinal T cells following infection of macaques with live attenuated and conditionally replication-competent SIV

MS Manoussaka*¹, R Stebbings², R Quartey-Papafio², M Robinson², M Page², AT Das³, W Kleibeuker³, B Klaver³, B Berkhout³, N Almond² and M Cranage¹

Address: ¹Cellular and Molecular Medicine, St George's University, London, UK, ²National Institute of Biological Standards, Health Protection Agency, Potters Bar, UK and ³Academic Medical Centre of the University of Amsterdam, Amsterdam, Netherlands

* Corresponding author

from AIDS Vaccine 2009
Paris, France. 19–22 October 2009

Published: 22 October 2009

Retrovirology 2009, 6(Suppl 3):P155 doi:10.1186/1742-4690-6-S3-P155

This abstract is available from: <http://www.retrovirology.com/content/6/S3/P155>

© 2009 Manoussaka et al; licensee BioMed Central Ltd.

Background

Live-attenuated SIV can induce superinfection resistance; however, the mechanism of this effect is not understood and may have implications for HIV vaccine development. To further investigate the role of virus replication in conferring protection we have analysed T cell phenotype and responses in gut tissue following infection of macaques with either SIVmac239 Δ nef or a doxycycline-dependent replication variant of SIVmac239 Δ nef designated SIVrtTA.

Methods

Mononuclear cells (MNC) were recovered from small and large intestine of four rhesus macaques infected with SIVrtTA for 26 weeks in the presence of orally-administered doxycycline. In two animals doxycycline was withdrawn for 8 weeks before analysis (Group A) and in 2 macaques analysis was performed at week 26 (Group B). A further two animals were analysed after 26 weeks of infection with SIVmac239 Δ nef (Group C). Peripheral blood mononuclear cells (PBMC) were recovered at the same time points. Polychromatic flow cytometry was used to assess the percentages of central memory (T_{cm}) (CD28⁺CD95⁺) and effector memory (T_{em}) (CD28⁻CD95⁺) T cells as well as CD4 and CD8 T responses to SIV Gag, Rev and Tat by the detection of TNF- α and IL-2.

Results

In animals with actively replicating SIV (Groups B & C) the percentage of CD4 and CD8 T_{cm} both in peripheral blood, and to a lesser extent, in the small and large intestine were relatively low compared to CD4 and CD8 T_{em} . In contrast, the reverse pattern was seen in animals where SIV replication was turned off by withdrawal of doxycycline (Group A). Intestinal MNC responded to Gag peptides producing TNF- α and IL-2. Animals withdrawn from doxycycline had Rev and Tat-specific CD4⁺ and CD8⁺ TNF- α producing T cells in both small and large intestine.

Conclusion

SIVrtTA offers a system for dissecting the parameters of replication, immune response and protective efficacy to more fully understand *in vivo* superinfection resistance.