Retrovirology

Poster presentation

P19-50 LB. Role of vaccine-induced innate and adaptive immunity in controlling mucosal transmission of SIV in macaques

Y Sui[5], Q Zhu[5], S Gagnon[5], A Dzutsev[5], M Terabe[5], M Vaccari[5], D Venzon[1], D Klinman[2], W Strober[3], B Kelsall[4], G Franchini[5], IM Belyakov[5] and JA Berzofsky*[5]

Address: [1]Biostatistics Branch, NCI, NIH, Bethesda, Maryland, USA, [2]Laboratory of Experimental Immunology, NCI, NIH, Bethesda, Maryland, USA, [3]Laboratory of Host Defenses, NIAID, NIH, Bethesda, Maryland, USA, [4]Lab of Molec Immunol,, NIAID, NIH, Bethesda, Maryland, USA and [5]National Cancer Institute, National Institutes of Health, Bethesda, Maryland, USA

* Corresponding author

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

Published: 22 October 2009

Retrovirology 2009, **6**(Suppl 3):P414 doi:10.1186/1742-4690-6-S3-P414

This abstract is available from: http://www.retrovirology.com/content/6/S3/P414

Background

Mucosal immunity is critical in AIDS virus infection because most transmission is through mucosal surfaces and the GI mucosa is a major reservoir for virus replication. There is window in time in which mucosal T cells could potentially eradicate a nascent local mucosal infection before it disseminates. In most vaccine work, adjuvant-induced innate immunity was of interest only to improve adaptive immunity. Here, in addition to adaptive immunity, we also examine direct adjuvant effects on innate immune protection.

Methods

We compared mucosal vaccine strategies involving synergistic TLR ligands, IL-15, both or neither as adjuvants with peptide-prime/MVA boost intrarectal vaccine, and have searched for possible correlates of protection against mucosal challenge.

Results

Only the group receiving all the adjuvants together with vaccine antigens achieved at least partial protection of rhesus macaques against intrarectal SIVmac251 challenge in 3 of 5 macaques. The optimal combination of several TLR ligands and IL-15 induced not only a more effective adaptive T cell response, but also an innate immune response that directly impacted protection. In the innate response, we found evidence for vaccine-induced long-lasting upregulation of APOBEC3G that provided some protection even in control animals that received only the adjuvants without the vaccine antigens. In the adaptive response, only polyfunctional CD8 T cells correlated with protection, whereas levels of tetramer-positive cells and even effector and central memory T cells surprisingly did not.

Conclusion

Thus, strategic use of combinations of molecular adjuvants can provide better mucosal protection through induction of both innate and adaptive immunity.