RETROVIROLOGY

ORAL PRESENTATION Open Access

Immune control of an SIV challenge by a heterolgous and direct mucosal vaccination regimen in rhesus monkeys

C Sun[1], Z Chen[2], X Tang[3], Y Zhang[4], L Feng[5], Y Du[3], L Xiao[4], L Liu[6], W Zhu[7], L Chen[4], L Zhang[8*]

From AIDS Vaccine 2012
Boston, MA, USA. 9-12 September 2012

Background

The mucosal surface is the major route for HIV-1 transmission, yet a safe and effective AIDS vaccine through direct mucosal immunization remains elusive.

Methods

Here, we report a novel vaccination regimen consisting of a mucosal prime with replication-competent vaccinia Tiantan rMVTTSIVgpe and an intramuscular boost with non-replicating rAd5SIVgpe expressing SIV Gag, Pol and Env. Twenty Chinese rhesus macaques were used to evaluate its safety, immunogenicity and protective potential.

Results

Compared with three control groups, the rMVTTSIVgpe-rAd5SIVgpe regimen elicited robust cellular immune responses with enhanced magnitude, sustainability and polyfunctionality, and higher titers of neutralizing antibodies against SIVmac1A11. Moreover, one rMVTTSIVgpe-rAd5SIVgpe vaccinated animal was fully protected, while the rest demonstrated 1.74-log and 1.2-log reductions in peak and set-point viral loads upon intrarectal challenge with a high dose (5x105 TCID50/animal) of a pathogenic and neutralization-resistant SIVmac239. Importantly, the rMVTTSIVgpe-rAd5SIVgpe vaccinated animals remained healthy up to 850 days post-challenge, while the majority (~75%) of controls progressed to simian AIDS. The protective effect was found to correlate with SIV-specific CD8+ T cell ELIspot responses against Gag and Pol, but not Env.

Conclusion

Our findings indicate that vaccine strategy engaging the mucosal surface from the beginning of vaccination may provide protective immunity against HIV-1 infection in humans.

Author details
[1]Guangzhou Institute of Biomedicine and Health, CAS, Guangzhou, China. [2]AIDS Institute, LKS Faculty of Medicine, University of Hong Kong, China. [3]AIDS Institute, LKS Faculty of Medicine, University of Hong Kong, China. [4]Guangzhou Institute of Biomedicine and Health, CAS, China. [5]Guangzhou Institute of Biomedicine and Health, CAS, China. [6]AIDS Institute, LKS Faulty of Medicine, University of Hong Kong, China. [7]AIDS Research Center, Chinese Academy of Medical Sciences, China. [8]Comprehensive AIDS Research Center, Tsinghua University, Beijing, China.

Published: 13 September 2012

doi:10.1186/1742-4690-9-S2-O3
Cite this article as: Sun *et al.*: Immune control of an SIV challenge by a heterolgous and direct mucosal vaccination regimen in rhesus monkeys. *Retrovirology* 2012 **9**(Suppl 2):O3.

[8]Comprehensive AIDS Research Center, Tsinghua University, Beijing, China
Full list of author information is available at the end of the article