Retrovirology

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Oral presentation

Detection of broad functional gag-specific CD4+ T cell responses in HIV-1-infected subjects following therapeutic immunization with rMVA expressing an HIV-1 gag immunogen

Beatrice Ondondo*[1,2], Hongbing Yang[1], Tao Dong[1], Kati de Gleria[1], Annie Suttill[1], Christopher Conlon[1], Denise Brown[1], Patricia Williams[1], Paul Bowness[1], Sarah L Rowland-Jones[1,2], Tomáš Hanke[1], Andrew McMichael[1] and Lucy Dorrell[1]

Address: [1]Medical Research Council Human Immunology Unit, Weatheral Institute of Molecular Medicine, Oxford University, Oxford, OX3 9DS, UK and [2]Viral Diseases Program, Medical Research Council Laboratories, P.O. BOX 273 Banjul, The Gambia

Email: Beatrice Ondondo* - beatrice.ondondo@wolfson.oxford.ac.uk

* Corresponding author

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Background

Virus-specific CD4+ T cells with interleukin-2 (IL-2)-secreting and/or proliferative capacity are detected readily in HIV-1-infected long-term nonprogressors and rarely in persons with untreated progressive infection. The contribution of these cells to viremia control is uncertain but this question might be addressed in clinical therapeutic vaccination studies. However, the quality of T helper responses induced by currently available HIV-1 vaccine candidates has not been explored in depth.

Methods

We determined the effect of vaccination with modified vaccinia virus Ankara expressing HIV-1 gag p24/p17 (MVA.HIVA) on HIV-1 specific CD4+ T cell responses in 16 chronically infected HAART-treated subjects using CD8-depleted IFN-g Elispot assays, intracellular cytokine staining assays for IL-2 and IFN-g and a CFSE-based proliferation assay.

Results

Gag-specific CD4+ T cell responses were significantly increased in magnitude and breadth after vaccination and targeted both known and new epitopes, several of which were also recognized by healthy HIV-uninfected volunteers immunized with the same vaccines. The frequencies of CD4+ T cells expressing IL-2 or IFN-g, alone or simultaneously were also augmented.

Conclusion

These findings indicate that functional virus-specific T helper cells can be boosted by vaccination in chronic HIV-1 infection. Further evaluation of their role in controlling viremia is warranted.