Retrovirology

BioMed Central

Poster presentation

P16-20. TB co-infection is associated with increased cytotoxic phenotype marker expression on CD8+ T lymphocytes, but reduced HIV-specific degranulation

ST Pillay*, D de Swardt, J Kabue and RH Glashoff

Address: Pathology, Stellenbosch University, Cape Town, South Africa
* Corresponding author

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

Published: 22 October 2009

Retrovirology 2009, **6**(Suppl 3):P249 doi:10.1186/1742-4690-6-S3-P249

This abstract is available from: http://www.retrovirology.com/content/6/S3/P249

Background

South Africa is burdened with a severe HIV epidemic, in which 28% of the adult population is infected. This is compounded by the occurrence of an equally severe TB epidemic. HIV-TB co-infection in South Africa has been estimated to account for 18% of all cases wordwide. The impact of TB co-infection on the immunopathogenesis of HIV in this high prevalence region has not been adequately assessed.

Methods

In this cross-sectional study we examined the impact of TB co-infection on phenotypic and functional characteristics of CD8 T lymphocytes. A total of 25 HIV-1 infected individuals, 15 TB/HIV-1 co-infected individuals and 12 uninfected controls were included in the study. Phenotypic and functional marker expression was determined by flow cytometry.

Results

HIV infection alone was associated with increased baseline expression compared to uninfected controls of TNF-alpha, perforin, granzyme A, PD-1, Fas (CD95), and FasL (CD95L), but not CD137(4-1BB) or IFN-gamma. TB co-infection resulted in additional increases in baseline expression of TNF-alpha, perforin, PD-1, and FasL (CD95L), as well as increased IFN-gamma. HIV-1 antigen (gag)-specific stimulation in vitro indicated that in HIV infection expression of activation and cytotoxicity markers CD137, IFN-gamma, TNF-alpha, Fas, FasL and CD107a/b were increased. In TB co-infection a reduction in CD107a/b up-regulation (degranulation) was observed, indicating functional impairment.

Conclusion

TB co-infection reduced antigen-specific CTL functional activity, but increased other cytolytic markers (Fas, FasL, TNF-alpha) which could be involved in non-antigen-specific bystander target cell death. The expression of the co-stimulatory molecule CD137 correlated with CTL interferon-gamma production and levels of degranulation, confirming its usefulness as a putative surrogate marker of functional responsiveness. These data indicate that in addition to impacting on CD4 T cell function, TB co-infection leads to dysfunctional CTL responses.