Twigger et al. Retrovirology 2014, 11(Suppl 1):P79
http://www.retrovirology.com/content/11/S1/P79

RETROVIROLOGY

POSTER PRESENTATION Open Access

Frequency and function of KIR$^+$ CD8$^+$ T cells in HTLV-1 infection

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From 16th International Conference on Human Retroviruses: HTLV and Related Viruses
Montreal, Canada. 26-30 June 2013

An efficient antiviral cytotoxic T lymphocyte (CTL) response to HTLV-1 infection maintains a low proviral load (PVL), reducing the risk of HAM/TSP. Host genotype, particularly of HLA class I, is a major determinant of CTL efficiency, and the influence of specific HLA class I alleles on HTLV-1 immunity is well documented. We recently showed that killer immunoglobulin-like receptor (KIR) genotype also influences CTL efficiency, by affecting HLA class I-mediated HTLV-1 immunity. Possession of the KIR2DL2 gene enhanced the effect of known protective or detrimental HLA class I alleles on PVL and HAM/TSP risk. This study aims to profile the frequency and function of CD8$^+$ T cells expressing KIR2DL2 and other KIRs in HTLV-1 infection. Analysing total KIR expression showed the presence of KIR$^+$CD8$^+$ T cells, NK cells and CD4$^+$ T cells in PBMCs from uninfected and HTLV-1$^+$ donors. A subset of HTLV-1$^+$ donors had high frequencies of total KIR$^+$CD8$^+$ T cells. Analysing individual KIRs revealed the presence of KIR2DL2$^+$CD8$^+$ T cells in HTLV-1$^+$ donors. Preliminary data from PBMCs stimulated with Tax peptides indicates that KIR2DL2$^+$CD8$^+$ T cells constitute a very small proportion of the IFNγ-producing Tax-specific CD8$^+$ T cell population. HTLV-1$^+$ asymptomatic carriers had higher frequencies of IFNγ-producing Tax-specific KIR2DL2$^+$CD8$^+$ T cells than donors with HAM/TSP did. Further work is underway to characterise the function of Tax-specific CD8$^+$ T cells by staining with anti-CD107a, anti-IFNγ and the HLA-A2/Tax$_{11\text{-}19}$ pentamer, and to compare the frequency and function of KIR2DL2$^+$CD8$^+$ T cells with those expressing other 2-domain KIRs.

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Published: 7 January 2014

doi:10.1186/1742-4690-11-S1-P79
Cite this article as: Twigger *et al.*: Frequency and function of KIR$^+$ CD8$^+$ Tcells in HTLV-1 infection. *Retrovirology* 2014 **11**(Suppl 1):P79.

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