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Highly expression of Tim-3 on HIV-specific T cells associated with disease progression and T-cell exhaustion in HIV-1 infected Chinese

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Background

The exact mechanism of T-cell exhaustion remains to be defined during HIV-1 infection. Recent studies suggest that the inhibitory receptor T-cell immunoglobulin domain and mucin domain 3 (Tim-3) may play an important role in the exhaustion of HIV-specific T cells.

Methods

72 HIV-1 infected individuals with different disease outcomes were recruited in this study. Tim-3 expression and the profile of cellular immune response were measured by using Multicolor Intracellular Cytokine Staining (ICS) assay. Association between Tim-3 expression levels and disease progression was analyzed. And the potential role of Tim-3 on immune regulation during HIV-1 infection was investigated through assessment of CTL response with frequencies of Tim-3 expression and blocking effect.

Results

Tim-3 was found to be highly expressed on HIV-specific CD4+ T cells and CD8+ T cells, especially in primary infectors and AIDS patients. The frequencies of Tim-3 expression correlate with disease progression. The level of Tim-3 expression was related with cytokines production and blockade of Gal-9/TIM-3 signaling partially restored the ability of HIV-specific T cells to secrete cytokines in vitro.

Conclusion

The frequencies of Tim-3 expression correlate with disease progression in HIV-1 infected individuals and manipulating Gal-9/TIM-3 signaling pathway may

provide a novel therapeutic measure to control HIV-1 replication.

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