

Infectious Diseases

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Lower activation-induced T-cell apoptosis in 2nd infection of hetero-serotype dengue virus

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The available evidence suggests that dengue virus-specific T lymphocytes and cytokine storm play a pivotal role in the immunopathogenesis of plasma leakage. Investigations are underway to identify the immune profiles associated with increased or decreased risk for severe disease. In this study, CD14⁺ cells from the peripheral blood mononuclear cells (PBMCs) of patients who recovered from DENV-1 infection were infected with DENV-1 or DENV-2 and co-cultured with memory T cells. We found that secondary infection with DENV-2 suppresses the cell reproductive capacity but forms more cell clones and more functional cells to produce more pro-inflammatory factors (IFN- γ , TNF- α , IL-6, IL-8, IL-12 and IL-17) and less regulatory cytokines (IL-10, TGF- β) which results in higher viral replication compared to secondary infection with DENV-1. Memory dengue virus-specific T cells which are induced in a primary dengue virus infection are reactivated by the heterologous serotype of dengue virus and antigen-presenting cells (APCs) during a secondary infection. Dramatically, less apoptosis and more continuous activation of T cells in secondary infection with hetero-serotype DENV were observed. This discovery which has not been reported previously may be the reasonable and vital interpretation for the cytokine storm and severe symptoms observed in secondary infection with DENV. In summary, secondary infection with hetero-serotype DENV elicits the relatively pathological immune response while secondary infection with homologous-serotype DENV induces the relatively protective immune response by activation-induced cell death (AICD) of T cells.

Biography

Jintao Li is a Professor, Director and Principle Investigator in Department of Tropical Pathogens and Epidemiology, Institute of Tropical Medicine, Third Military Medical University (TMMU). She completed her Master's Degree in Molecular Biology at Biotechnology Centre, Southwest University in 1996 and then became a Faculty in Genetics department, TMMU. She completed her PhD at Immunology Institute, PLA, TMMU in 2000 and became an Associate Professor and then Professor. From 2011-2012, she worked in Canada as a Visiting Scientist for one year. Now, she has published more than 100 academic papers in journals such as *Science Translational Medicine*, *Journal of Immunology* and *European Journal of Immunology*.

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