# T-CELL PHENOTYPE AND FUNCTION DURING HUMAN ACUTE ZIKV INFECTION

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**Background:** Zika virus (ZIKV) has recently emerged as severe global health issue. Understanding host protective immunity to ZIKV may represent a key issue in vaccine efficacy definition and in identifying possible immune-pathogenetic mechanisms in severe infections. Unfortunately, no data are available on the cellular immune response in the acute phase of ZIKV infection, and its role in the protection and/or pathogenesis needs to be clarified.
**Methods:** T cells profile was analyzed in 6 patients with acute ZIKV infection and compared with 3 patients with acute Dengue virus (DEGV) infection and with 6 healthy donors (HD). Phenotype and functionality of T cells were analyzed by flow cytometry, Elispot test and proliferation/degranulation assay.
**Results:** The frequency of CD4 and CD8 T cells was similar between ZIKV and HD, while a significant increase in CD8 T cells was observed in DEGV patients. CD8 and CD4 T cells were activated (CD38, HLA-DR) both in ZIKV and in DEGV, expressed an effector phenotype and presented a higher expression of apoptotic CD95 marker. Cytokines profiling after mitogenic stimulation showed a lower frequency of IFN-g-producing CD4 T cells in ZIKV respect to DEGV. Although not significant, a lower frequency of IL-2-producing CD4 and CD8 T cells was observed in both ZIKV and DEGV than in HD. Notably, a significant expansion of CD3+CD4-CD8- T-cell subset expressing Vδ2 TCR was specifically observed in ZIKV but not in DEGV patients. Vδ2 T cells from both ZIKV and DEGV patients showed a higher level of Granzyme B and a lower proliferation capability than HD. Nevertheless, a reduction in the IFN-γ single positive Vδ2 T cells was observed in ZIKV respect to both DEGV and HD with a parallel increase in IFN-γ/MIP1β double positive Vδ2 T cells. Finally, in vitro experiments showed that healthy Vδ2 T cell lines release Perforin/Granzyme after recognition of ZIKV-infected cells, suggesting a cytotoxic protective role of these cells.
**Conclusions:** Altogether our results showed that ZIKV infection induced i) T cell activation/differentiation and a modulation of the cytokine profile, and ii) an expansion of Vδ2 T cells with a cytotoxic profile. These findings provide new knowledge on the immune response profile during ZIKV infection pointing out the possible protective role of cytotoxic Vδ2 T cells in controlling ZIKV replication.