Katherine Torres

Ms. Torres has worked in the Malaria Research Working Group at the IMTAvH since 2004 having several tasks in research projects on humoral immunology, organizing and training health workers in a Program of Control Malaria in border areas from the Andean Community. Afterwards, she was in charge of coordinating a Project that involved mainly field work. Currently, she is a PhD candidate at University Cayetano Heredia supported by the NHI-Fogarty Training Grant and has started to work on innate immune responses of asymptomatic and symptomatic individuals during malaria infection.

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ISID Small Grant Program Report

Role of T Regulatory Cells on Symptomatic and Asymptomatic Individuals Infected with *Plasmodium falciparum* in the Peruvian Amazon

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Summary

Several studies have demonstrated that regulatory T cells (Tregs) play a critical role balancing protective immune responses and the immune mediated pathology during malaria infection. These cells suppress cellular immune responses through direct contact with immune effectors cells and by producing regulatory cytokines, including TGF-ß and IL-10, on experimental models and human *P. falciparum* infection suggesting that Tregs may contribute to the onset of the infection. The objective this study was to find out the association between Tregs and outcome of the disease in individuals infected with *P. falciparum* living in a hypoendemic malaria region (Peruvian Amazon Region).

Treg cells were identified by flow cytometry as CD4+ T cells expressing Foxp3, CD25 and low levels of CD127 and are reported as a percentage of total CD4+ T cells in three groups: symptomatic (S), asymptomatic (AS) and control (C) individuals. PBMCs from each individual were cultured using the recombinant C-terminal repeat region GLURP (R2) antigen from *P. falciparum*, as stimuli. The concentration of IL-10, TNF-α and IFN-γ from the culture supernatant was measured each day during 6 days.

This study showed that symptomatic (S), asymptomatic (AS) and control (C) groups presented similar Tregs percentage, 3.89%, 3.47% and 3.51% respectively in peripheral blood. Furthermore, there is no a positive correlation between parasitemia and Tregs percentage (P-Value= 0.47).

TNF-α levels were the highest in PBMCs cultures in S group (>1440.24 pg/ml), IL-10 stayed low (~200 pg/ml) over the first four days of culture, having a peak during the 6th day (759.28 pg/ml). IFN-γ levels were low (347.6 pg/ml) in the same group.

About the AS group, TNF-α had a discreet high level at the 1st day (697.6 pg/ml) and going down (~130 pg/ml) during the next 5 days. IL-10 showed a peak of secretion the 1st day (363.55 pg/ml) staying state during the all days. It was also observed a very low secretion of IFN-ɣ against the stimuli during the first six days.

There was no difference among S, AS and C individuals on Tregs percentage and no correlation between parasitemia levels and Tregs percentage in the different groups. These results suggested that Tregs may are not implicated in the control and/or exacerbation of parasite multiplication, instead, it could imply a control by Th1 and Th2 response during malaria infection in this population.

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