Role of T Regulatory Cells on Symptomatic and Asymptomatic Individuals Infected with \textit{Plasmodium falciparum} in the Peruvian Amazon

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\section*{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-\(\beta\) and IL-10, on experimental models and human \textit{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 \textit{P. falciparum} living in a hypoendemic malaria region (Peruvian Amazon Region).

Tregs 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 (R.2) antigen from \textit{P. falciparum}, as stimuli. The concentration of IL-10, TNF-\(\alpha\) and IFN-\(\gamma\) 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-\(\alpha\) 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-\(\gamma\) levels were low (347.6 pg/ml) in the same group.

About the AS group, TNF-\(\alpha\) 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-\(\gamma\) 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 (P-Value= 0.47).

There were no differences in the percentage of Tregs among symptomatic, asymptomatic and control groups in the Peruvian Amazon Region.

\section*{References}