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Poster presentation

P01-03. Regulatory T cells and TH-17 cells counterbalance in CD4+ T cell activation in HIV-1-infected subjects progressing to immunodeficiency

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Background

During the course of HIV-1 infection, the status of immune activation is associated with disease progression. The immune system has adopted self-regulatory mechanisms to counterbalance undesirable immune activation. Regulatory T cells (TReg) expressing FoxP3 and CD4+ T cells expressing IL-17 (TH17) play an important role in this phenomenon. We hypothesized that a have couterbalance of TH17 and TReg cells is found in subjects progressing to immunodeficiency.

Methods

Twenty-six individuals HIV-1-infected subjects were analysed pre and post antiretroviral treatment. PBMC were stained and run using a 6-color flow cytometer to evaluate immunophenotyping of forkhead box P3 (Foxp3), and the activation status. PBMC with or without phorbol myristate acetate (PMA) and ionomycin stimulation were evaluated using a combination of markers (CD4, CD3, IL-17, IL-2, TNF-α and IFN-).

Results

Data points were compared using non-parametric methods. The pre-treatment sampes tended to have lower TRegs and TH17 cells compared to post-treatment samples. Pre- and post-treatment T cell activation levels, as measured by the expression of HLADR+CD38+CD69+ on CD4+ T cells (2.5 [1.6 – 3.4] vs. 1.4 [0.8 – 1.7], respectively, $p < 0.01$) and CD38+HLADR+ on CD8+ T cells (42.90 [31.35 – 50.75] vs. 17.50 [8.65 – 23.95], respectively, $p < 0.0001$) cells was higher in pre-treatment samples. The levels of CD4+ T cell activation, measured by CD69 expression, was positively associated with the frequency of TH17 cells ($r = 0.72$, $p < 0.001$), but negatively associated with the frequency of TRegs ($r = -0.53$, $p < 0.05$), both measured in the pre-treatment, which was lost after the initiation of antiretroviral drugs.

Conclusion

TRegs and TH17 cells have opposite effects on T cell activation in HIV-infected subjects who are progressing to immunodeficiency, but this counterbalance is overshadowed by the initiation of antiretroviral therapy. These results suggest that the intense activation seen with the progression to immunodeficiency is largely reflected in the peripheral blood of such patients.