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The effect of Rituximab treatment on T cells

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Introduction

Rituximab is a therapeutic anti-CD20 antibody used for in vivo depletion of B cells.

However, the mechanisms of action are not fully understood because clinical responses do not always correlate with the extent and duration of B cell depletion.

Aim

This study was conducted to examine the effect of B cell depletion on peripheral T cells from rheumatoid arthritis patients.

Methods

RA patients received rituximab (1000 mg). Peripheral blood samples were collected at baseline and at 30, 90 and 180 days postinfusion. The phenotype of T cell subsets of peripheral blood from RA patients were examined by cytometry and cytokine production was determined by ELISA.

Results

According to our previous results, peripheral B cell depletion was fully effective by 30 days. No changes in the percentage of CD3+, CD4+, CD8+ and NK cells were found. There was a comparative progressive diminution of CD8+CD45RO+ cells with recovery starting at 180 days. DAS28 significantly correlated with CD8+CD45RO+ cells. Since CD8+CD45RO+ diminution was coincident with the clinical response measured as DAS28, we investigated whether IL-15 could be responsible for this population changes in rheumatoid arthritis patients. As expected there was significant levels of IL-15 in the serum RA patients (110 ± 31 pg/ml) compared to healthy donors (< 10 pg/ml). Rituximab treatment decreased IL-15 levels in serum from rheumatoid arthritis patients. Although, no significant correlation was observed between IL-15 in the serum and CD8+CD45RO+ cells, levels of IL-15 transpresented on the surface of neutrophils from RA patients significantly correlated with CD8+CD45RO+ ($p<0.01$) cells and CD8+CD45RO+/RA+ ratio ($p<0.001$).

Conclusion

This study demonstrates that rituximab treatment is able to reduce IL-15 levels. This reduction could be responsible for tthe CD45RO+ changes during the follow-up.

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