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MEETING ABSTRACT Open Access

Recombinant human T-cell leukemia virus types 1 and 2 Tax proteins induce high levels of CC-chemokines and downregulate CCR5 in human peripheral blood mononuclear cells

Christy S Barrios[1*], Muna Abuerreish[1], Laura Castillo[1], Michael D Lairmore[2], Edward L Murphy Jr.[3], Chou-Zen Giam[4], Mark A Beilke[1*]

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Background

HTLV-1 and HTLV-2 trans-activating proteins (Tax1, Tax2) differ with respect to their ability to activate genes regulating viral replication, latency, and host cellular immune responses. Although HTLV-2 infections are usually asymptomatic, immunologic alterations are observed. We previously showed that HTLV-2 tax/rex viral load was upregulated in patients with HIV-1/HTLV-2 co-infection. This correlated with higher CD4+ T cell counts and improved health outcomes, possibly due to induction of CC-chemokines.

Methods

In this study, recombinant Tax1 and Tax2 proteins were expressed in E. coli. PBMCs were incubated with different concentrations of Tax proteins (10-100 pM). Supernatant fluids and cells were harvested at multiple time points for quantitative determinations of MIP-1alpha/CCL3, MIP-1beta/CCL4, RANTES/CCL5, and CCR5 receptor expression.

Results

In preliminary experiments it was shown that PMBCs from HTLV-2 infected donors had significantly lower levels of CCR5 expression and higher levels of RANTES/CCL5 compared to HTLV-2 seronegative donors ($p<0.05$). Tax1 and Tax2-treated PBMCs showed increased viability over a seven day period compared to controls ($p<0.01$). Both Tax1 and Tax2 induced equally high levels of all three CC-chemokines compared to mock-treated controls ($p<0.05$). Tax2-treated PBMCs showed a significantly lower percentage of CCR5-PE positive cells compared to mock-treated PBMCs within the gated lymphocyte population ($p<0.05$).

Conclusions

Recombinant Tax2 is a potent modulator of CC-chemokines and CCR5 in vitro. Further investigations are needed to determine the underlying mechanism(s), and whether Tax2 recapitulates the observed effects in vivo.

Author details
[1]Division of Infectious Diseases, Medical College of Wisconsin and Research Service, Clement J Zablocki Veterans Affairs Medical Center, Milwaukee, WI 53226, USA. [2]Department of Veterinary Biosciences, Center for Retrovirus Research, The Ohio State University, Columbus, OH, 43210, USA. [3]Departments of Laboratory Medicine and Epidemiology/Biostatistics, University of California, San Francisco, CA, 94118, USA. [4]Department of Microbiology and Immunology, Uniformed Services University of the Health Sciences, Bethesda, MD, 20814, USA.

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* Correspondence: mbeilke@mcw.edu
[1]Division of Infectious Diseases, Medical College of Wisconsin and Research Service, Clement J Zablocki Veterans Affairs Medical Center, Milwaukee, WI 53226, USA
Full list of author information is available at the end of the article