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MEETING ABSTRACT Open Access

Innate and adaptive anti-viral immune responses in MS patients treated with interferon-beta

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Background

Interferon-beta (IFN-β) has both immuno-modulating and anti-viral effects. In a longitudinal study of multiple sclerosis (MS) patients undergoing interferon-beta therapy, we have performed a comprehensive study of factors in the innate and adaptive immune response to the two types of virus associated with MS: human endogenous retroviruses (HERVs), and herpesviruses.

Materials and methods

Anti-viral antibodies towards HERVs and herpesviruses were assayed using TRIFMA or ELISA. Cytokine profiling was performed using the Luminex-system. Factors in the lectin complement activation pathway were assayed using TRIFMA.

Results

We demonstrate significant decreases in anti-Envelope antibody reactivity for the two closely related Gammaretroviral HERVs, HERV-H and HERV-W, as a consequence of IFN-β therapy, closely linked to efficacy of therapy/low disease activity. We also found strong indications of a protective effect of high levels of two components in the innate pathogen-associated molecular pattern recognition: mannan-binding lectin (MBL), and MASP-3.

Serum levels of typical Th1- and Th2- related, MS-relevant cytokines were also monitored. We found no overall changes in Th1/Th2 ratios.

Conclusions

Our results support that IFN-β exerts effects on immune response to HERV-H/HERV-W, and that this antiviral response may play a role in MS development. Components in the immune response to HERVs have potential as biomarkers for disease activity.

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