

Specific T-cell activation in peripheral blood and cerebrospinal fluid in central disorders of hypersomnolence

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Abstract

An autoimmune-mediated process in the pathophysiology of narcolepsy type 1 (NT1) is highly suspicious, if this pathomechanism is transferable to other types of central disorders of hypersomnolence (CDH), is still controversial. The association of NT1 with HLA class II system implicates a T-cell-mediated autoimmunity, in which helper CD4⁺ T-cells and cytotoxic CD8⁺ T-cells may be pathogenic. This study aimed to identify specific immune profiles in peripheral blood (PB) and cerebrospinal fluid (CSF) in different types of CDH. Forty-three people with polysomnographically confirmed CDH (24 idiopathic hypersomnia [IH], 12 NT1, and 7 NT2) were compared with 24 healthy controls (HC). PB and CSF were analyzed with multiparameter flow cytometry to distinguish between subclasses of peripheral and intrathecal immune cells and specific surface markers of T-cells. The overall proportion of helper CD4⁺ T-cells and cytotoxic CD8⁺ T-cells in PB and CSF did not differ between the patients and HC. Activated HLA-DR⁺ CD4⁺ T-cells and HLA-DR⁺ CD8⁺ T-cells in PB and CSF both in NT1, NT2 and IH were significantly increased compared with HC. A significant correlation of HLA-DR⁺ CD4⁺ and HLA-DR⁺ CD8⁺ T-cells with higher amounts of excessive daytime sleepiness was found in the NT1 and IH groups, indicating an association of activated T-cells in the central nervous system with an increase in sleepiness. These findings provide further evidence of a T-cell-mediated autoimmunity not only in NT1, but also in NT2 and IH. Moreover, the identification of activated cytotoxic CD8⁺ T-cells further supports the evidence of T-cell-mediated neuronal damage, which has previously been suggested in NT1.

[narcolepsy](#), [idiopathic hypersomnia](#), [T-cell-mediated autoimmunity](#), [HLA-DR⁺CD4⁺ T-cells](#), [HLA-DR⁺CD8⁺ T-cells](#), [orexin/hypocretin](#)

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