Sleep Research Society®

Article Navigation

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

Julian Lippert, Peter Young, Catharina Gross, Sven G Meuth, Bianca Dräger, Anja Schirmacher, Anna Heidbreder

Sleep, Volume 42, Issue 2, February 2019, zsy223, https://doi.org/10.1093/sleep/zsy223
Published: 16 November 2018 **Article history ▾**

Views ▼ Cite Permissions Share ▼

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 $HLA\text{-}DR^+$ $CD4^+$ T-cells and $HLA\text{-}DR^+$ $CD8^+$ T-cells in PB and CSF both in NT1, NT2 and IH were significantly increased compared with HC. A significant correlation of $HLA\text{-}DR^+$ $CD4^+$- and $HLA\text{-}DR^+$ $CD8^+$ 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, $HLA\text{-}DR^+CD4^+$ T-cells, $HLA\text{-}DR^+CD8^+$ T-cells, orexin/hypocretin

Topic:

- flow cytometry
- human leukocyte antigens
- hypersomnolence
- autoimmunity

hla-dr antigens

hypersomnolence, idiopathic

narcolepsy

t-lymphocytes

cerebrospinal fluid

drowsiness

t-cell activation

orexins

Issue Section: Neurological Disorders

You do not currently have access to this article.

Sign in

Don't already have an Oxford Academic account? Register

Oxford Academic account

Email address / Username

Password

Sign In

Forgot password?

Don't have an account?

Sleep Research Society members

Sleep Research Society®

Sign in via society site

American Academy of Sleep Medicine members

AASM American Academy of SLEEP MEDICINE™

Sign in via society site

Sign in via your Institution

Sign in

Purchase

Subscription prices and ordering

Short-term Access

To purchase short term access, please sign in to your Oxford Academic account above.

Don't already have an Oxford Academic account? Register

Specific T-cell activation in peripheral blood and cerebrospinal fluid in central disorders of hypersomnolence - 24 Hours access

EUR €36.00 GBP £28.00 USD $45.00

Rental

This article is also available for rental through DeepDyve.

View Metrics

Email alerts

New issue alert

Advance article alerts

Article activity alert

Subject alert

Receive exclusive offers and updates from Oxford Academic

More on this topic

CSF Histamine Contents in Narcolepsy, Idiopathic Hypersomnia and Obstructive Sleep

Apnea Syndrome

Is Low Histamine a Fundamental Cause of Sleepiness in Narcolepsy and Idiopathic Hypersomnia?

Decreased Cerebrospinal Fluid Hypocretin-1 Levels Near the Onset of Narcolepsy in 2 Prepubertal Children

Body Mass Index-Independent Metabolic Alterations in Narcolepsy with Cataplexy

Related articles in

Google Scholar

Related articles in PubMed

Comparative analysis of the germinal center response by flow cytometry and immunohistology.

Prevalence of antibodies to ganglioside and Hep 2 in Gaucher, Niemann - Pick type C and Sanfilippo diseases.

Complement, infection, and autoimmunity.

Identification of infants with increased type 1 diabetes genetic risk for enrollment into Primary Prevention Trials-GPPAD-02 study design and first results.

Citing articles via

Google Scholar

CrossRef

Latest | **Most Read** | **Most Cited**

Characterization of the sleep disorder of anti-IgLON5 disease

Actigraphic detection of periodic limb movements: development and validation of a potential device-independent algorithm. A proof of concept study

Simultaneous tonic and phasic REM sleep without atonia best predicts early phenoconversion to neurodegenerative disease in idiopathic REM sleep behavior disorder

Residual symptoms after natural remission of insomnia: associations with relapse over 4 years

Sleep duration and fragmentation in relation to leukocyte DNA methylation in adolescents

Online ISSN 1550-9109
Print ISSN 0161-8105