

Immunoregulation as a protective factor of the nervous system in degenerative diseases

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Abstract

Regulatory cells are critical for maintaining immune homeostasis in the central nervous system. Regulatory cell populations have been reported to control neuroinflammation in neurodegenerative conditions like Parkinson's disease, multiple sclerosis, myasthenia gravis, encephalomyelitis, and Alzheimer's disease by protecting neurons through different mechanisms, including the production of cytokines such as IL-10 and TGF- β , promoting the expression of inhibitory receptors (PD1, TIM3, LAG3), and inducing tolerance through cell-cell interactions by CTLA-4. Various phenotypes of CD4+ and CD8+ regulatory T cells, Bregs, MDCs, and toIDCs have been described and, despite the great interest in their function, few studies have focused on elucidating their role in neurodegenerative diseases. Therefore, this review aims to describe the mechanisms of regulation and suppression of effector cells in neurodegenerative diseases. The study of these mechanisms has led to the development of therapeutic approaches targeting molecules with suppressive or regulatory activity in severe neurological disorders.

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