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Poster Presentation

Inflammation or Neurodegeneration: Which one has Remarkable Role in Multiple Sclerosis?

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Abstract

Multiple Sclerosis (MS) is a complex disease resulting from the occurrence of intermingled episodes of neuroinflammation and degeneration. However, this concept has recently challenged by several observations suggesting that in this disease neurodegeneration might occur independently of inflammation. The evidence that active neurodegeneration in MS is invariably associated with inflammation is provided. The attack of myelin starts inflammatory processes, which triggers other immune cells and the release of soluble factors like cytokines and antibodies. Further breakdown of the blood–brain barrier in turn causes a number of other damaging effects such as swelling, activation of macrophages, more activation of cytokines and other destructive proteins. Inflammation can potentially reduce transmission of information between neurons in at least three ways. The soluble factors released might stop neurotransmission by intact neurons. These factors could lead to or enhance the loss of myelin, or they may cause the axon to break down completely. Neuroinflammation could also found in deep gray matter with pathological and clinical relevance. Therefore, control of inflammation with anti-inflammatory therapies must take into account as one of the main purposes of MS treatment parallel with other immunomodulatory and immunosuppressive treatments. Future therapeutic options for this disease discussed based on recent knowledge of the mechanisms of inflammation and neurodegeneration.

Keywords: Inflammation, Neurodegeneration, Multiple Sclerosis

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