DEBATE: ARE MS AND NMO TWO POLARIZED DISEASES? DOES THIS HAVE TREATMENT IMPLICATIONS? NO

Wolfgang Brück
Professor of Neuropathology, Head, Department of Neuropathology University Medical Center Göttingen, Georg-August University Göttingen, Germany

Multiple sclerosis is generally described as an inflammatory demyelinating disorder. However, it is better to describe multiple sclerosis as a syndrome that includes different diseases which all show the histopathological features of inflammation and demyelination. The spectrum of these inflammatory demyelinating diseases includes classic Charcot-type multiple sclerosis, neuromyelitis optica, Balo's concentric sclerosis as well as acute disseminating perivenous encephalomyelitis (ADEM). All of these diseases within the multiple sclerosis spectrum show as a common feature inflammatory demyelinating lesions. It is well known that classic Charcot-type MS lesions are heterogeneous in nature and four different subtypes of multiple sclerosis lesions have been defined according to their leading mechanisms of demyelination. When classifying the whole spectrum of inflammatory demyelinating disorders of the multiple sclerosis syndrome, different categories can be defined according to the pathogenetic mechanisms of lesion formation. Pattern I MS lesions can be attributed to a reaction of the cellular immune system and are mainly T cell/macrophage-driven. Pattern II MS lesions as well as NMO are clearly antibody-driven disorders of the multiple sclerosis spectrum. ADEM may belong to this spectrum since in patients with ADEM, high antibody titers against MOG have been identified. Pattern III MS lesions as well as Balo's concentric sclerosis share common features with apoptosis of oligodendrocytes and myelin protein dysregulation, indicating oligodendrocyte dystrophic processes as a major driving mechanism of lesion formation. In conclusion, multiple sclerosis is a spectrum of different demyelinating conditions in which subtypes should be classified according to the leading mechanisms of lesion formation. Antibody-mediated types of classic multiple sclerosis as well as neuromyelitis optica share common pathways of lesion induction and should therefore not be described as two polarized diseases.