Multiple sclerosis treatment

- Research progress of platelets in neurodegenerative diseases
- Multiple sclerosis: etiology in the context of neurovascular unit and immune system involvement and advancements with in vitro blood-brain barrier models
- B cell-extrinsic and intrinsic factors linked to early immune repletion after anti-CD20 therapy in patients with multiple sclerosis of African ancestry
- Gut Microbiota in a Viral Model of Multiple Sclerosis: Modulation and Pitfalls by Oral Antibiotic Treatment
- Modulating Cognition-Linked Histone Acetyltransferases (HATs) as a Therapeutic Strategy for Neurodegenerative Diseases: Recent Advances and Future Trends
- Simultaneously Dealing With Immortal Time Bias and Residual Confounding: A Case Study of a High-Dimensional Propensity Score Approach With a Nested Case-Control Framework in Multiple Sclerosis Research
- Distinct cAMP Regulation in Scleroderma Lung and Skin Myofibroblasts Governs Their Dedifferentiation via p38α Inhibition
- Quantitative cervical cord MRI in spinal muscular atrophy: a sensitive imaging biomarker of disease evolution and treatment

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Accordingly, treatment strategies have been centered on immunodulation and remyelination, with the former primarily focused on reducing the pathology rather than enhancing myelin repair which the latter targets. While conceding to the emerging view of heterogeneity in the pathology of MS, which precludes variations in degree of immune response (i.e., inflammation) and demyelination, the concept of enhancing myelin repair is appealing since it is likely to provide both disease-reducing and disease-inhibiting therapeutic approach to MS.

Pregabalin (Lyrica®) is prescribed to MS patients to treat neuropathic pain. Mechanistically, it targets voltage-dependent Ca2+ channels and reduces harmful neuronal hyperexcitation in mouse epilepsy models. Studies suggest that GABA analogues like pregabalin exert neuroprotective effects in animal models of ischemia and trauma.

METHODS: We tested the impact of pregabalin in a mouse model of MS (experimental autoimmune encephalomyelitis, EAE) and performed histological and immunological evaluations as well as intravital two-photon-microscopy of brainstem EAE lesions.

RESULTS: Both prophylactic and therapeutic treatments ameliorated the clinical symptoms of EAE and reduced immune cell infiltration into the CNS. On neuronal level, pregabalin reduced long-term potentiation in hippocampal brain slices indicating an impact on mechanisms of learning and memory. In contrast, T cells, microglia and brain endothelial cells were unaffected by pregabalin. However, we found a direct impact of pregabalin on neurons during CNS inflammation as it reversed the pathological elevation of neuronal intracellular Ca2+ levels in EAE lesions.

CONCLUSION: The presented data suggest that pregabalin primarily acts on neuronal Ca2+ channel trafficking thereby reducing Ca2+-mediated cytotoxicity and neuronal damage in an animal model of MS. Future clinical trials need to assess the benefit for neuronal survival by expanding the indication for pregabalin administration to MS patients in further disease phases [1)].

Disease Modifying Therapies

Published data support the use of FO-DMTs in MS. The consensus may aid shared decision-making. While a consensus focused on Europe, the results may contribute to enhanced quality standards for FO-DMTs use elsewhere [2].

Findings suggest that adding a disease-modifying MS therapy to the regimen of patients treated with chemotherapy is necessary only if the patient suffers from a highly active, aggressive course of MS. In view of the lack of prospective trials, individual risk assessments should remain the foundation of the decision on MS treatment in concurrent CNS tumor diseases [3].

1)
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