

Special Issue on Neuroimaging Biomarkers in Multiple Sclerosis

CALL FOR PAPERS

Multiple sclerosis is a chronic inflammatory demyelinating disease that affects the whole brain. Neuroimaging techniques that can help elucidate and characterize the nature and mechanism of tissue injury and disease progression in MS are of particular importance given its roles in seeking successful preventive and therapeutic treatments of the disease. Imaging biomarkers of MS include multiple lesions, brain atrophy, and normally appearing brain tissue abnormalities. Although MS is considered to be an autoimmune inflammatory disease that primarily activates hematogenous macrophages that destroy myelin, growing evidence strongly suggests that MS is a diffuse neurodegenerative disease.

Imaging myelin in brain has great potential in revealing the myelination and maturation process in brain and can help further explain the link between the initial inflammatory event and subsequent degenerative processes of the disease. While myelin is most abundant in white matter, forefront studies suggest that demyelination could occur in grey matter during aging and MS. Further improvements are expected in this active research field in terms of quantification and improvement of myelin detection accuracy. The neuroimaging techniques in MS detection can be further extended to other neurodegenerative diseases including Alzheimer's disease, schizophrenia, and white matter injuries following stroke.

We invite authors to contribute original research articles as well as review articles that will address the developments and challenges of neuroimaging biomarkers in multiple sclerosis detection and diagnosis research.

Potential topics include but are not limited to the following:

- ▶ Recent developments in neuroimaging of MS including myelin imaging techniques such as MRI-based UTE/ZTE, quantitative susceptibility mapping, magnetization transfer imaging, diffusion tensor imaging, and spectroscopy
- ▶ Advances in improvement of multiple sclerosis detection and quantification including acquisition acceleration, higher resolution, compartmental modeling and postprocessing of using multiparametric imaging techniques including neurovascular and neurometabolic coupling and reactivity
- ▶ Advances of multimodality neuroimaging biomarkers in MS including MRI, PET/CT, and optogenetics
- ▶ Investigation of connections among multiple phenotypes that influence the MS disease in brain including behavior, biological, genetic, and psychological factors
- ▶ Developments of animal model research for elucidating basic disease physiology and mechanism
- ▶ Applications of neuroimaging techniques to other demyelination-related diseases including neuromyelitis optica
- ▶ Applications of neuroimaging in general normal and abnormal developmental and neurodegenerative trajectory

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/np/npms/>.

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