Brain atrophy measurements should be used to guide therapy in ms - yes

R. Zivadinov
Buffalo Neuroimaging Analysis Center, Department of Neurology, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, State University of New York, USA
MR Imaging Clinical Translational Research Center, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo, State University of New York, USA

The assessment of brain atrophy in patients with multiple sclerosis (MS) has become one of the most important correlates and predictors for development of physical and cognitive disability in short-, mid- and long-term. Brain atrophy development is accelerated compared with the general population, continues throughout the course of the disease and is clinically meaningful from the earliest disease stages. There has been an increasing interest in understanding the effects of disease-modifying drugs (DMD) on slowing brain volume loss as an indicator of effectiveness of treatment. As clinical trials in MS are usually powered to assess effects on relapse rate, disability progression and lesion development, assessment of brain atrophy was used only as a secondary or tertiary endpoint in their study design. However, a recent meta-analysis study showed that the treatment effect on brain atrophy is associated with the effect on disability progression, and is partially independent of the effect of active MRI lesions. The majority of first-generation DMDs have shown only modest evidence of slowing brain atrophy, compared to placebo. There is mounting evidence that second-generation DMDs have a more robust effect in reducing atrophy when compared to placebo or active first-generation DMD comparators. Because of increasing evidence that DMDs can significantly slow down rate of neurodegeneration in MS patients, there is an important need to integrate brain atrophy, as metric of disease progression monitoring and treatment response at the group and individual level.