Evoked potentials still have a role in diagnosing MS and monitoring disease progression - No

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Evoked potentials (EP's) are measures of central signal conduction and have been used for long time as electrophysiological surrogates primarily as diagnostic biomarkers for multiple sclerosis (MS) diagnosis (supporting dysfunction) but also recently considered beneficial as biomarkers for monitoring disease course & progression. MRI's are still considered more sensitive than EP's for diagnosis and monitoring MS, but continuous search for more sensitive biomarkers are explored. The sensitivity of specific EP's depends on length of the tract and the area affected, therefore multimodal Ep's including sensory (VEP, SSEP and BAEP) and motor EP's are considered more pertinent in providing a comprehensive evaluation of disease related structural status. In demyelinating disease, conduction as measured by EP's depends on the number of intact fibers but also can be influenced by temperature and medications. Therefore, concerns are raised on validity and reproducibility of EP's metrics possibly influenced by factors as temperature and certain medications that interfere with ion channels (i.e dalfampridine, phenytoin) able to modify signal transmission with a rather "symptomatic "and not a structural effect. Newer interventions on remyelination showed primary benefit on EP's outcomes but did not support a clear improvement as measured with standard clinical outcomes. Providing more accurate data on Ep's changes and defining clinical meaningful changes are still necessary. Limitations of Ep's are also considered related to insensitivity to cognitive and cerebellar dysfunctions as well as a ceiling effect on advanced disability and sure unknown effect of aging. Newer more sensitive methods including multifocal visual evoked potentials for anterior visual pathway evaluation as well as the delayed event related potentials (ERP's) for cognitive assessment may provide more sensitive future outcome measures. As most of trials will require multicenter involvement, EP's methods standardization and a central reading center will be necessary before considering EP's as primary outcomes in clinical trials.