



Electrophysiological Abnormalities of Multiple Sclerosis in the Late Elderhood

Bella Walker*

Department of Geriatrics, University of Leicester, Leicester, United Kingdom

DESCRIPTION

Multiple Sclerosis (MS) is the most common type of an inflammatory demyelinating illness in the central nervous system, being recognized for nearly 200 years with Ollivier reporting the first case in 1824. The hallmark of MS is symptomatic episodes which occur months or even years apart involving different locations in the central nervous system. The basic pathology across the entire spectrum of this demyelinating illness is the destruction and loss of myelin. Saltatory conduction primarily requires myelin as an insulator surrounding the axons. Myelin is composed of lipid and proteins predominantly. Peripheral myelin is produced by Schwann cells and central myelin is produced by oligodendrocytes. Nodes of Ranvier are the interruptions in this myelin coating where the axonal membrane with its concentration of voltage gated sodium channels is exposed to the extracellular environment.

Maintenance of a normal conduction velocity requires myelin. Damage to myelin can result in a significantly reduced conduction velocity or in severe cases can even lead to conduction block in older adults. Conduction velocity can also be affected by other factors such as antibodies and certain chemical messengers such as nitric oxide. Block of conduction can be a harbinger of the cascade of events leading to pathological demyelination. Electrophysiology, in particular evoked potentials was one of the primary tools used in the diagnosis of multiple sclerosis initially in elderly. But recent advances in neuroimaging have outmoded this unique tool in the diagnosis of MS. Nonetheless, there are circumstances in which these electrophysiological investigations still assist in the diagnosis of MS.

For example, Visual Evoked Potentials (VEP) are useful to demonstrate spatial dissemination if the imaging modalities are unable to do so. Subjects with unclear or vague symptoms may require evoked potential testing to confirm a relapse. Also unlike most of the imaging modalities, electrophysiological investigations can also test the functional integrity of both the central and peripheral tracts. Several recent studies have established the effectiveness of evoked potentials in MS and

there is a re-emerging interest in these electrophysiological investigations. It is however yet to be clearly established whether the electrophysiological measures have significant correlations with MS symptomatology, duration of illness or disease severity.

Also, though subjects with MS in general do not have peripheral nerve involvement approximately 5% of patients develop demyelinating neuropathy. Very few studies have explored this association for which epitope spreading may be responsible. Both peripheral neuropathy and radiculopathy have been reported in patients with MS. No major study has used electrophysiology to check the integrity of the peripheral nervous system in MS in detail. MS has long been considered as a predominantly sensorimotor disorder. However, the importance of cognitive dysfunction in multiple sclerosis is also being increasingly recognised.

The prevalence of cognitive dysfunction in MS is as high as 45%–60% according to several studies and severe dementia in accordance to the ICD (International Classification of Diseases) criteria is observed in 20%–30% of the MS patients of 55 years and above with a cognitive dysfunction. Unlike the sensorimotor deficits, these subtle neuropsychological deficits can easily be missed in the clinical setting even to the most astute clinicians. Also, the cognitive dysfunction in MS can involve a single domain or can involve multiple domains leading to heterogeneous manifestations making it even more difficult for the clinicians to identify them. Several specific patterns of cognitive dysfunction have been reported by recent studies.

CONCLUSION

The role of the event related potential P300 in the diagnosis of MS related cognitive impairment has been explored by some studies but is far from clear. The P300 is an event related potential which is thought to be an electrophysiological measure of the process of decision making. It is an endogenous potential, as its occurrence is related to a person's cognitive response to it rather than the physical characteristics of a delivered stimulus. P300 reflects the processes involved in stimulus evaluation and categorization. The P300 is thought to have multiple generators,

Correspondence to: Bella Walker, Department of Geriatrics, University of Leicester, Leicester, United Kingdom, E-mail: bellaw@gmail.com

Received: 14-Sep-2022, Manuscript No. JASC-22-18588; **Editor assigned:** 19-Sep-2022, Pre QC No. JASC-22-18588 (PQ); **Reviewed:** 03-Oct-2022, QC No JASC-22-18588; **Revised:** 10-Oct-2022, Manuscript No. JASC-22-18588 (R); **Published:** 17-Oct-2022, DOI: 10.35248/2329-8847.22.S14.005.

Citation: Walker B (2022) Electrophysiological Abnormalities of Multiple Sclerosis in the Late Elderhood. J Aging Sci. S14:005.

Copyright: © 2022 Walker B. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

with the hippocampus and various association areas contributing. It may represent the information transfer to consciousness involving several nodes in the brain. Similarly, sleep impairment is a fairly common problem in people with MS with a reported incidence around 19%–34%. It may play a

crucial role in health and quality of life but is often overlooked. Insomnia, restless legs syndrome, periodic limb movement disorders, and sleep-related breathing disorders are some of the manifestations. Very few studies have highlighted the importance of polysomnography in MS.