

Short Communication

Cognition in Multiple Sclerosis

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Introduction

MS is a multifocal demyelinating and neuro-inflammatory disease of the CNS. An early account of mental function in MS was provided by Charcot in 1877, who noted that 'at a certain stage of the disease,' patients with MS may show 'marked enfeeblement of the memory; conceptions are formed slowly; the intellectual and emotional faculties are blunted in their entirety'. Despite an accurate description by Charcot of the cognitive dysfunction in MS patients, most clinicians continued to believe that cognitive impairments were uncommon in MS and were observed only in patients with long-standing disease and severe physical disability [1].

Prevalence

The prevalence of cognitive dysfunction in MS has been historically underestimated. However, studies of large, unselected samples of MS patients have reported cognitive impairment prevalence rates between 40 and 70% [2].

Domains Affected

The neurological substrate of neuro-behavioral deficits in MS is not purely subcortical; it affects not only the classic subcortical white matter tracts but also the axons of the association neurons in the cerebral cortex. Impairment of cognitive domains such as memory, mental processing speed, attention, and executive function can occur from the early stage of the disease and tends to worsen over time, resulting in significant functional impairment at work and at home, despite minimal physical disability.

It is believed that not only demyelination is responsible for Grey Matter (GM) atrophy, but also axonal, neuronal, glial, and synaptic loss can be found in cortical GM lesions and could be responsible for atrophy and cortical thinning in MS.

In MS spectrum of CI is quite heterogeneous. The common clinical presentation is that of subtle cognitive deficits. In spite of varied presentation, controlled neuropsychological studies have consistently shown relative decline in attention, information processing efficiency, executive functioning, processing speed and long term memory [3].

Simple attention (repeating digits) and essential verbal skills (e.g. word naming and comprehension) were usually spared. General intelligence is usually retained and overt dementia is rare in MS [4]. Impairment of memory is the most consistently reported cognitive symptom by patients of MS. Working memory dysfunction appears early in the disease course and is independent of disease duration or physical disability [5].

Evaluation of Cognition

Benedict et al [6], recommended the use of a minimal, core battery of neuropsychological tests suitable for both routine clinical use and research. They named this battery of tests the Minimal Assessment of Cognitive Function in Multiple Sclerosis (MACFIMS). The five cognitive domains most commonly affected in MS patients (processing speed/working memory, learning and memory, executive function, visual-spatial processing and word retrieval) were evaluated. This battery requires approximately 90 minutes administering according to published instructions for each individual test.

Impact of Cognitive Impairment

Cognitive impairment is an important predictor of health related quality of life at all stages of multiple sclerosis [7]. Declining performance over time on tests of attention and verbal memory has been shown to predict reduced employment status. Cognitive dysfunction can have a significant impact on the patient's employment status, social interactions, and dependence on others.

References

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