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COGNITION AND MULTIPLE SCLEROSIS

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Cognitive symptoms are reported at some point in the disease course by 50% to 75% of individuals living with multiple sclerosis (MS). Cognitive deficits and fatigue are both nearly universal symptoms as well as the two most frequently reported reasons for workplace disability in MS.

MS research points to impairments of memory, attention and concentration, information processing, executive functions (planning, prioritizing, and multi-tasking), visuospatial functions and verbal fluency in patients with MS. General intellect, remote memory, conversational skills and reading comprehension are generally preserved. Although we have learned in recent years that cortical involvement is the rule in MS, cortical syndromes such as aphasia, apraxia, and visual agnosia are much less common.

Cognitive issues may be the first symptom of MS, and occur early in the disease, or at a later stage in the disease process. Neuropsychological testing often shows deficits in asymptomatic patients even at the time of the first clinical episode. In addition, cognitive symptoms are often impacted by other issues, such as depression, stress and clinical disease exacerbation, and it is important to rule out these issues as a possible cause of cognitive problems, particularly as these are often treatable.

MRI can be helpful in studying cognitive impairment in MS. Although cognitive deficits do not necessarily correlate with MS disease course or severity of physical disability or symptoms, cognitive function generally does track with overall lesion number and lesion volume (lesion load). Brain atrophy can be precisely measured by a number of techniques, including brain parenchymal fraction (BPF). Hypointense “black” or “gray” holes can also be assessed by MRI and followed longitudinally.

Assessment: A neuropsychological assessment can be important in identifying the exact nature of the individuals’ cognitive strengths and weaknesses as well as differentiating the psychological issues impacting cognition from the neurological ones. Individuals with MS who recognize they are having difficulties with memory, problem solving and other cognitive issues, are often frightened that they are “losing it” and may be developing Alzheimer’s disease. Reassuring patients that these symptoms are common in MS and will not lead to Alzheimer’s is often very helpful in relieving stress, and this often allows individuals to be open to learning strategies to compensate for their deficits.

Occupational and speech therapists are also trained to administer and interpret cognitive assessments. These do not replace a comprehensive neuropsychological battery of testing but can provide important information regarding cognitive functioning when a full neuropsychological assessment is not possible or necessary. This can assist the therapist in developing a comprehensive plan in which compensatory strategies are taught, particularly regarding improving activities of daily living (ADLs).

Treatment: Common strategies for common symptoms. Treatments for cognitive deficits include learning compensatory strategies, managing lifestyle issues, and involving family, significant others, co-workers, friends, and caregivers. In an effort to reassure the patient and assist in implementing strategies. Depression, if present should be independently treated and may require therapy and/or antidepressant medication. For many individuals with memory problems, learning to use common memory tools, such as a planner, calendar, or visualization may be helpful. Inputting

information using different senses, such as 'see it, say it, write it' can be useful techniques. It takes time to learn to use compensatory strategies, and some degree of frustration is typical as the person is trying to remember to utilize such strategies. Devices using computers (smart phones, tablet computers, etc.) are increasingly useful in helping patients live better with cognitive impairment. Computerized memory games are now available for patients, however the research is mixed as to whether this "improves" memory or not.

Training patients to avoid distractions while working, engage in one activity at a time, and use devices such as timers to remind an individual to start, return to, or end an activity, can also help.

Individuals with deficits in executive function would benefit from learning to pre-plan a project before starting it - this would involve writing the steps needed to complete the activity before starting it and then referring to this list as they are engaged in the task.

Many individuals note that they have difficulty finding words as they are engaged in conversation; this is called the "tip of the tongue phenomenon." There is no definitive way to improve this problem, but often just explaining to the client that they are not losing their memory is reassuring. A speech and language pathologist may also be helpful in teaching word retrieval techniques.

The remediation of cognitive deficits through specific skills training and computer programs is an area with some promise. An article by Lynch (2002) discusses the development of the use of computer and video games in the remediation of cognitive deficits. He posits that compensatory approaches work best for more complex cognitive problems, such as abstract reasoning, planning and problem solving, while the restorative approach shows some promise for cognitive skills of attention and processing speed. In both cases, the individuals need to have insight into their deficits. Flavia, Stampatori, Zanotti, Parrinello and Cara (2010) in a study with individuals with MS looking at the use of computer-based intensive training for attention, information processing and executive functions found that subjects who participated in a three month, three times a week, 1 hour of intensive individual training using a computer software program, demonstrated

improvements in the research group on information processing/attention and decision making. They also noted that there was no generalization to other neuropsychological functioning. The use of computer assisted rehabilitation for cognitive impairments may be useful for specific skills training around attention and information processing, but more research needs to be completed. Individuals with MS should not be discouraged from trying these programs, since engaging in any cognitively-demanding tasks can be of value.

A final component of cognitive rehabilitation is the importance of education and support from significant others in the patient's life. This includes family members, friends, caregivers, and if possible, co-workers. For compensatory techniques to be effective, everyone must understand why they are needed, and how to support the individual in their use. Having family members attend therapy sessions with the client as they are learning new techniques is very valuable.

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