



COMPUTER-ASSISTED COGNITIVE REHABILITATION IN PATIENTS WITH MULTIPLE SCLEROSIS

Suarez GA, Perez F, Avila M, Hutton GJ, Rivera VM

Introduction: Cognitive problems may affect more than 60 percent of patients with Multiple Sclerosis (MS). These include emotional, memory, learning, attention and executive skills that may affect the quality of life. Recent studies have proven efficacy of individualized and hierarchically based-computer cognitive rehabilitation in establishing new neuronal connections (1,2). This supports the benefit of using the computer-assisted cognitive rehabilitation (CACR) in patients with a history of brain trauma and schizophrenia (3,4). The cognitive problems may also play a big role in the quality of life of these patients (5).

Objective: To apply a scientifically proven CACR program in patients with MS.

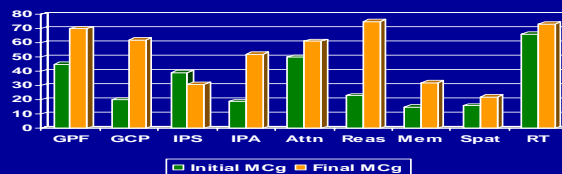
Materials and Methods: Prospective study in progress. 12 individuals with MS demonstrating mild to moderate cognitive deficits in a comprehensive neuropsychological evaluation will participate in the study. The duration of the study will be 36 weeks. The participant will also be administered the MicroCog evaluation as a baseline as well as every 6 weeks to monitor progress. The MicroCog is a computer-based assessment of cognitive functions that provides a valid and reliable measure of progress. They will participate in a weekly one-hour CACR sessions at the clinic and they will be required to do homework assignments using the computer at home on a daily basis. Internet connection at home is also required. Quality of life measures and emotionality measures will be collected.

The CACR consists of six tracks of individual cognitive therapy exercises. These are: 1) Attention; 2) Executive skills; 3) Memory skills; 4) Visuospatial skills; 5) Problem solving skills and 6) Communication skills. Finally, participants will undergo a repeat neuropsychological evaluation at the end of their participation in the study.

Results: 3 participants have been involved in the study so far. We have seen cognitive and quality of life improvement in each patient with mild to moderate cognitive deficit.

Case 1: 38 year old male, law student, diagnosed with MS 13 years ago, on treatment with Betaseron and having cognitive problems that were affecting his studies. initial evaluation in 2005 and the results showed mild cognitive abnormalities. He began the CACR and the results are shown in figure 1.

Figure 1. Case 1: Mild impairment (Results in percentiles)



GCF: General cognitive functioning
 GCP: General cognitive proficiency
 IPS: Information processing speed
 IPA: Information processing accuracy
 Spat: Spatial processing
 RT: Reaction time

Case 2: 29 year old male with severe cognitive impairment at the initial evaluation. He began the CACR without having improvement with results shown in figure 2.

Figure 2. Case 2: Severe cognitive impairment (Results in percentiles)



Conclusions: Quality of life and mild to moderate cognitive problems may improve with the systematic use of the CACR in patients with MS. We did not see improvement in the patient with severe cognitive deficits. Future studies should focus on how to improve and maintain the cognitive function in MS patients and the CACR may be a useful tool to reach this objective.

References:

1. Chiaravalloti ND, DeLuca J, Moore NB, et al. *Mult Scler* 2005;11(1):58-58.
2. Bennet, et al. *The Journal of Cognitive Rehab* Sept/Oct 1991;18.
3. Chen SH, Thomas JD, Glueckauf RI, et al. *Brain Inj* 1997;11(3):197-209.
4. Belluci D, Glaberman K, Haslam N. *Schizophrenia Research* 2002;59:225-232

