

VA IRB# 04-1205, ID# 01545

ABSTRACT (PDS): EFFECTS OF TRAINING ON CENTRAL AUDITORY FUNCTION IN MULTIPLE SCLEROSIS

OBJECTIVES:

The purpose of the proposed investigation is to assess thoroughly the central auditory processing (CAP) deficits for patients with Multiple Sclerosis (MS). Additionally, since there is evidence that the brain has inherent plasticity and is capable of being retrained (Jancke, Gaab, Wustenberg, et al, 2001), we will also examine whether or not the implementation of an auditory training program can improve central auditory function in patients with MS.

RESEARCH DESIGN: We have developed requisite instrumentation and test materials to evaluate central auditory function in individuals with MS and will examine potential rehabilitative strategies. Experimental subjects will be recruited from the Portland Veterans Affairs Medical Center (VAMC), Oregon Health and Science University and from the general community. Control subjects will be matched to the subjects with MS with respect to age, gender and audiometric configuration.

METHODOLOGY: Five general types of evaluations will be employed over multiple study sessions at the National Center for Rehabilitative Auditory Research (NCRAR). First, a neurologist will review the subject's medical history and perform a neurologic exam to confirm MS diagnosis. Second, peripheral auditory function will be evaluated using a standard set of routine audiometric tests. Additionally, subjects will complete a case history and series of hearing handicap inventories. Third, a battery of behavioral procedures will be used to characterize central auditory processing. Fourth, auditory evoked potential studies will be performed. Emphasis here will be upon evoked potentials whose putative neural generators lie within the central auditory nervous system. Fifth, subjects will receive functional magnetic resonance imaging (MRI) evaluation to determine site and amount of neural activation during dichotic listening. After evaluation, half of the MS subjects will be enrolled into a home-based auditory training program to evaluate possible improvements in auditory function. The other half of the subjects with MS will serve as a control group and complete a non-auditory home based task i.e.; crossword puzzles. After training, the aforementioned evaluation procedures will be repeated in order to look at both pre and post test measures. Another control group of subjects without MS will only complete the pre-test battery and will not be enrolled in either home based program.

FINDINGS TO DATE:

To date, 56 subjects total have signed the informed consent form and of those 50 are actively enrolled in this investigation. Since the study onset approximately 400 subject test sessions have been completed and of these 200 within the last review period. The average session length ranged from 2.5 to 4.0 hours. Protocol development has been refined and data collection has been the focus the past year. Data analysis is in it's early phases and preliminary results have been presented at conferences in 2009.

RELEVANCE TO VA MISSION: Hopefully this study will increase knowledge of how auto-immune disease impacts audition. Ultimately we hope to better understand and improve the communicative quality of life for veteran patients afflicted with multiple sclerosis.

Version 11-24-09