

Project Title: Assessment of Auditory Function in Patients with Parkinson Disease
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Project Summary/Abstract

Few investigations of auditory function in patients with Parkinson Disease (PD) have been conducted or published. Results from a small number of studies indicate that PD patients experience auditory deficits (including hearing loss) with greater prevalence and severity than healthy control subjects of similar age. Some authors and clinicians recommend that auditory function should be evaluated routinely in Parkinson patients because such sensory manifestations of the disease are often not formally assessed, and thus are misdiagnosed or under-diagnosed. Untreated hearing loss or auditory processing deficits can contribute to communication problems that reduce the quality of life for Veterans with PD. The proposed study will use behavioral tests of auditory function, auditory event-related potentials (AERPs) and questionnaires to provide detailed assessments of auditory function in Parkinson patients. Findings from this pilot project will provide data necessary for the design of a full-scale Merit Review proposal that will include assessment of rehabilitative interventions for auditory deficits in this population.

Objective: The *long-range goal* of this research program is to identify Veterans with Parkinson Disease (PD) who are at risk for auditory deficits related to their disease so that current difficulties can be addressed and further deterioration can be prevented or treated. The *objective of this proposal* is to assess peripheral and central auditory functions in patients with Parkinson Disease (PD).

The *central hypothesis* of the proposed research is that deficits in auditory processing occur with greater prevalence and severity in Parkinson patients than in age-matched control subjects. Our hypothesis has been formulated on the basis of supportive preliminary studies. We will test our central hypothesis and accomplish the objective of this application by pursuing the following specific aims:

Specific Aim 1: Evaluate the peripheral hearing (auditory thresholds) of PD patients and compare the results to those from age-matched control subjects who do not have PD.

Specific Aim 2: Evaluate central auditory processing, including speech perception ability, of PD patients and compare the results to those from age-matched control subjects who do not have PD.

Study Design: Study groups will include 50 patients with Parkinson Disease and 50 age- and gender-matched healthy control subjects. All subjects will attend 3 appointments: 1) Initial evaluations and physical exam; 2) Peripheral and Central auditory testing; 3) Electrophysiological recordings. PD patients who take levodopa daily will undergo study procedures in the morning, within 3 hours of ingesting the medication.

Impact: At the conclusion of this study, we will have a better understanding of auditory problems and deficits experienced by Parkinson patients. This information could be used to develop and assess interventions to improve auditory processing in patients who experience such deficits. Ultimately, these interventions might help to slow or even reverse functional degradation within the central auditory system. Data from the proposed study and related investigations would facilitate patient selection and outcome assessments for these and other rehabilitative interventions. Ultimately, these interventions will contribute to improved quality of life for Veterans and non-Veterans with PD.