

“Treatment Implications for Parkinson’s Disease”

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Background

People with Parkinson’s disease have trouble speaking clearly and audibly. Monotone is often a serious problem that impacts quality of life.

Goals

We have focused on targeted sensorimotor training techniques that appear to dramatically improve functional and neural outcome. Rats vocalize in complex patterns at ultrasonic frequencies that can be monitored and manipulated with vocalization training. Other cranial motor functions such as jaw and tongue control have been examined as well. Our group has been among the first to show that exercise can be most neuroprotective if it specifically targets dopamine dependent behaviors.

We have data to support the view that neural degeneration and symptoms of fine motor control and balance can be slowed or even reversed with the right combination of early treatments.

To view representative sonograms of slowed-down ultrasonic vocalizations in parkinsonian rats and control rats, see: http://www.homepage.psy.utexas.edu/homepage/group/schallertlab/6ohda_vs_control.html

Timeline

This research project started in January 2008. We expect the entire study period to be completed by December 2012.

We have completed all the experiments we proposed, although we are still investigating novel avenues for improving treatment. For example, we are targeting attentional and balance impairments. Also, we are collaborating with others to discover successful treatments for other neurological disorders involving neuronal degeneration that might be very useful in PD as well. We have found, for example, that enhancing mitochondrial function or reducing inflammation in stroke and PD models is highly neuroprotective.

Relevance

If our hypothesis that symptoms of fine motor control (including vocalization) and balance can be improved or reversed with a combination of early treatments is confirmed, then people living with PD will be so much better off. They may be less likely to fall, for example, and their social life and overall health will improve. We are conducting a human case study that so far indicates that multiple protective interventions can be remarkably beneficial. Our research could ultimately help lead to more effective therapies that combine metabolic elements with known medications.



Future Direction

We want to know whether anti-parkinson or other drugs can further boost functional outcome if combined with training. We have pilot data consistent with this, and we would like to explore this relationship when we can get sufficient funding.