TATRC Highlighted Research News Article:
"Assessing the Determinants of PD Progression: Long-term Dopamine Transporter Imaging in the PRECEPT Cohort"

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Study Confirms Method for Detecting Early Parkinson's Disease

New long-term research using the largest group of subjects in a Parkinson's clinical imaging study has confirmed that dopamine transporter (DAT) imaging can detect and monitor the progression of the disease very early on.

Dopamine is a neurotransmitter that stimulates the body's nerve cells that control the muscles. Parkinson's is associated with decreased dopamine production.

Because the disease is currently diagnosed only through symptoms that occur after most of a patient's dopamine-producing cells have already been lost, researchers are seeking more accurate, earlier ways to detect Parkinson's. They are discovering numerous biomarkers, molecules in the body that change in those with the disease.

The team working on the large-group DAT imaging study hopes that such imaging could be approved as a screening tool within the next six months, according to Dr. Kenneth Marek of the Institute for Neurodegenerative Disorders.

Research in this field is very important to the military due to the apparent link between traumatic brain injury and later development of Parkinson's disease. The disease causes tremors, rigidity and difficulty walking.

Says Marek, "Our work may provide a way to detect and diagnose Parkinsonism in service members who have sustained head injuries before symptoms even appear. This could lead to the design of better treatment for individuals with TBI—and maybe one day to the prevention of Parkinson's."

Marek's team used the baseline imaging of 806 early Parkinson's subjects from the United States and Canada who had been recruited for a drug study in 2002. While the clinical study failed, 710 of the subjects agreed to long-term DAT imaging follow-up.

Preliminary imaging and clinical data gathered at the 22-month time point confirmed that DAT imaging can be used to monitor the progression of Parkinson's disease and confirm those who do not have the disease.

"The large, well-characterized group of subjects is key to the reliability of our results," explains Marek. "Over this next five years of the study, we'll be able to establish the rate of progression, examine the relationship of different factors with the imaging outcome, and more fully estimate the duration of the presymptomatic period in Parkinson's disease."

Along the way, the team has discovered a new biomarker for disease progression. Marek says, “Others had shown that urate (a salt derived from uric acid) was related to the risk of developing Parkinson’s, but our collaborators were the first to identify it as a marker for risk of PD progression.”

The original drug trial was coordinated by the Parkinson Study Group, a network of 65 research groups nationwide. Marek’s lab at IND is the network’s imaging arm. Marek’s current long-term study is funded and managed by the U.S. Army Medical Research and Materiel Command’s Telemedicine and Advanced Technology Research Center.

Says TATRC chief scientist Dr. Charles Peterson, “This research is directly related to the longitudinal progression of TBI and the increased risk for developing Parkinson’s disease. We’re impressed with the leveraging of an unsuccessful clinical trial to make strides in the diagnosis of Parkinson’s.”

Marek’s group is conducting a second study, also supported by TATRC, to confirm whether DAT imaging can predict Parkinson’s risk in healthy individuals.