

What's Hot in Parkinson's Disease?

The Importance of Imaging Biomarkers to Diagnose and Track Parkinson's Disease Progression

A recent press release from the National Institutes of Neurological Disorders and Stroke detailed exciting ongoing work aimed at uncovering magnetic resonance imaging (MRI) techniques capable of tracking Parkinson's disease (PD) progression. In this "What's Hot in PD?" column we will review the recent progress of MRI-based biomarkers for Parkinson's diagnosis and progression, and will discuss the importance of the findings, especially in the context of clinical trials.

In August 2016, David Vaillancourt and colleagues at the University of Florida National Parkinson Foundation Center of Excellence published an important paper in "Human Brain Mapping." The Vaillancourt lab performed a clever experiment utilizing Rasagiline, a monoamine oxidase type B inhibitor used in PD and thought by some experts to have symptomatic and neuroprotective properties. The authors used a three Tesla MRI, which produces incredible anatomic details, to examine critical areas of the brain of a person with PD. They examined patients on or off Rasagiline and compared their results to control subjects who did not have PD.

The investigators used two different types of MRIs: functional MRI and diffusion MRI using a measure called free-water, and also measured coordination using a bedside pegboard test (a neuropsychological test of fine motor task). Interestingly, those who received Rasagiline had more signal change in an area called the posterior putamen on functional MRI—less free-water in the rear part of the substantia nigra on diffusion MRI—and those on Rasagiline also had a better performance on the pegboard test. These results indicated PD medication.

In a second paper published in the August edition of "Neurology," Vaillancourt turned his attention to brain activity changes over time as seen in people with PD. Using a functional MRI scan, the authors showed a decline of activity as measured over the course of one year. If the data holds up in future studies, this finding could be used as an important biomarker of Parkinson's progression.

It is important for people with PD, family members and the entire Parkinson's community to be aware of the importance of a reliable imaging biomarker that can be utilized for better understanding PD. Biomarkers can be used for diagnosing Parkinson's, but can also be applied to track disease progression.



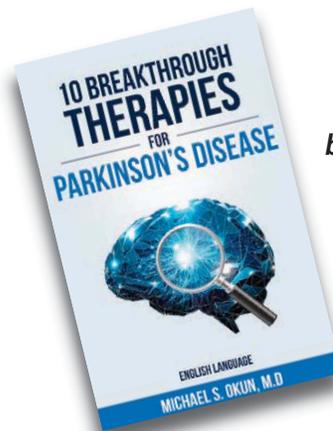
The PD community has a critical need to be able to accurately measure the effectiveness of drugs and other interventions on Parkinson's progression.

An MRI is a widely available tool and could be utilized to provide a safe and feasible way to test interventions for disease modification. These recent findings when added to other ongoing imaging research in the Parkinson's disease field offer the hope for better measurement tools that will likely translate to more definitive and meaningful clinical trials.

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Read Dr. Okun's monthly column, "What's Hot in PD?" online at www.parkinson.org/whatshot.

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