Breakthrough measures Parkinson's progression in the brain

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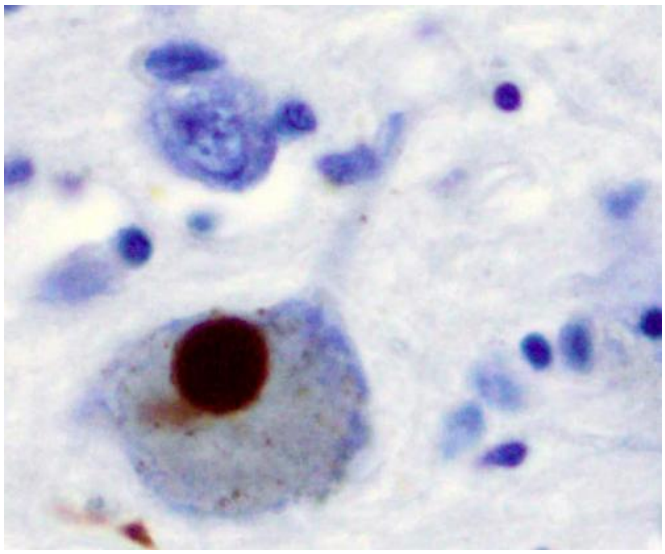

Immunohistochemistry for alpha-synuclein showing positive staining (brown) of an intraneural Lewy-body in the Substantia nigra in Parkinson's disease. Credit: Wikipedia

University of Florida researchers have identified a biomarker that shows the progression of Parkinson's disease in the brain, opening the door to better diagnosis and treatment of the degenerative disease.

By comparing brain images of Parkinson's patients to those of a control group over a year, an interdisciplinary team found that an area of the brain called the substania nigra changes as the disease advances. The findings provide the first MRI-based method to measure the disease's progression, which can inform treatment decisions and aid in identifying new therapies, said UF applied physiology and kinesiology professor David Vaillancourt, Ph.D., one of the study's authors.

"The Parkinson's drugs available today help reduce symptoms. They don't slow the progression of the disease, which is the major unmet medical need," Vaillancourt said. "We've provided a tool to test promising new therapies that could address progression."

The substania nigra of a Parkinson's patient has more "free water" - fluid unconstrained by brain tissue, likely because of disease-related degeneration. The new study published in the journal *Brain* uses diffusion imaging, a type of MRI, to show that free-water levels increase as the disease progresses. The free-water level was also a good predictor of how bradykinesia - the slowness of movement common to Parkinson's - advanced over the course of the subsequent year.

Because doctors typically diagnose the disease by evaluating patients' symptoms and how they respond to medication, the indicator could also be useful to distinguish Parkinson's from similar disorders. That could lead to better clinical trials, Vaillancourt said.

More information: *Brain*, brain.oxfordjournals.org/conte … /brain.awv136#ref-33

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