Imaging technique may trace development of Parkinson's disease

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While finding a biomarker for Parkinson's disease that would let physicians screen for or track its progression remains an elusive goal, a team led by a University of Illinois at Chicago neuroscientist has shown that a non-invasive brain scanning technique offers promise.

The tool may also help advance the development of new drugs or neuroprotective agents to treat or ward off Parkinson's. The findings, now online, will appear in a forthcoming issue of *Neurology*.

David Vaillancourt, assistant professor of kinesiology at UIC, along with colleagues from UIC and Rush University, used a type of MRI scan called diffusion tensor imaging on 28 subjects, half with early symptoms of Parkinson's and the other half without.

They scanned an area of the brain called the substantia nigra, a cluster of neurons that produce the neurotransmitter dopamine. Parkinson's patients have been found to have about half the number of dopaminergic neurons in certain areas of the substantia nigra as those without the disease.

Determining loss of dopaminergic neurons using conventional methods such as metabolic PET scans is expensive, invasive, and requires injection of radioactive tracer chemicals. But the method studied by Vaillancourt and his group is non-invasive, relatively inexpensive, and does not use radioactive tracers.

"We're suggesting it's possible to eventually diagnose Parkinson's disease non-invasively and objectively by examining the part of the brain thought to underlie the causes of the disease," said Vaillancourt. No tool currently available can do that, he said.

The researchers say the technique may also help develop neuroprotective agents to treat Parkinson's. Vaillancourt said it's difficult to identify a neuroprotective agent using current measures because the results are skewed by any therapy used to treat symptoms.

"When you have a symptomatic effect of the neuroprotective agent, you need a lot of patients from multiple centers to determine if the neuroprotective agent works," he said. "But if you have a disease marker not affected by a dopaminergic therapy, then you would be able to test neuroprotective agents among smaller groups."

Vaillancourt thinks that would enable faster development of drugs to treat Parkinson's. He noted that while the technique his group studied works well as a trait biomarker, which allows for diagnosis, it has not yet been shown to measure the state of the disease's progression. Further research is planned.

Source: University of Illinois at Chicago (news : web)