New biomarkers could help doctors spot Alzheimer's and other neurodegenerative diseases

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Neurodegenerative diseases like Alzheimer's and Parkinson's in their early stages can be difficult for physicians to spot, and many diagnoses are incorrect. A finding by researchers at the University of Washington and Harborview Medical Center may soon help in the diagnosis of such diseases.

The researchers have used an advanced technique to identify proteins in the human body, known as biomarkers, that can indicate whether a patient has a particular neurodegenerative disease, or determine the progression of a disease. Searching for biomarkers is nothing new, but the researchers used a cutting-edge proteomics system, called iTRAQ, that relies on isotopic labeling of protein molecules. The system could help a physician determine the amount of a biomarker a patient may have in his body, which can help with diagnosis.

In a large multi-site study, the researchers identified more than 1,500 potential biomarkers in cerebrospinal fluid from patients with one of three neurodegenerative diseases: Alzheimer's, Parksinson's, or dementia with Lewy bodies (DLB). Researchers identified different sets of potential biomarkers corresponding to each disease; each of the proteins are linked specifically to one of the diseases. The results appear in the new issue of the Journal of Alzheimer's Disease.

"We're getting very close to being able to use these biomarkers for the

clinical diagnosis of Alzheimer's and Parkinson's disease, and dementia with Lewy bodies," said the study's lead author, Dr. Jing Zhang, associate professor of pathology at the UW. His lab is at Harborview Medical Center. "This is a major improvement on other biomarker detection techniques."

Alzheimer's, Parkinson's, and other neurodegenerative diseases affect millions of people in the United States, and the toll of the diseases is expected to worsen as the Baby Boomer generation grows older. Though researchers and clinicians are learning more and more about the diseases, there is still uncertainty in the diagnosis and treatment of these conditions.

The biomarkers identified in this study need to be tested in a larger population of patients before becoming part of a full diagnostic tool, Zhang said, but these results are promising. The extensive number of proteins that the research team found in patients with neurodegenerative diseases will likely help researchers create a large panel of biomarkers that could be used in a clinical diagnosis and in monitoring disease progression.

The multi-site study also included researchers from Oregon Health and Science University in Portland; Baylor College of Medicine in Houston; the Fred Hutchinson Cancer Research Center in Seattle; and Applied Biosystems in Framingham, Mass.

Source: University of Washington

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