New brain protein tied to Alzheimer's disease

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Scientists have linked a new protein to Alzheimer's disease, different from the amyloid and tau that make up the sticky brain plaques and tangles long known to be its hallmarks.

The discovery could give a new target for developing drugs and other treatments for Alzheimer's, the most common form of dementia. It also might help explain why many people have plaques and tangles in their brain yet show no symptoms of the disease. Autopsies on 342 brains revealed that people who had the new protein were 10 times more likely to have been mentally impaired when they died than those without it.

The study was discussed Wednesday at the Alzheimer's Association International Conference in Copenhagen, where researchers also described a new type of brain imaging that can show tau tangles in living people for the first time.

For many years, the only sure way to diagnose Alzheimer's disease was after death, when brains could be examined for amyloid and tau. Several companies now make imaging agents that can reveal amyloid on brain scans, and the new research shows an experimental product from Eli Lilly & Co. can do the same for tau.

"I think it will transform the field" because tau correlates better with symptoms than amyloid does, said Dr. Clifford Jack, a Mayo Clinic dementia expert with no role in that work.

"This is very important," agreed Laurie Ryan of the National Institute on Aging, which funded both studies. It should help diagnose Alzheimer's and enroll people in studies testing treatments, she said.

Researchers from Massachusetts General Hospital described the tau work. Scans on 56 older people believed to be cognitively normal showed that tau buildup in several brain regions correlated with memory decline.

Dr. Keith Josephs of the Mayo Clinic led work on the new brain protein, called TDP-43. Everyone has it, but the abnormal form is found in different parts of the cell and in ball-like deposits in certain areas in the brain. It's already been linked to amyotrophic lateral sclerosis, or Lou Gehrig's disease, and frontotemporal dementia.

Researchers looked for it in brain samples from 342 people in a study of aging at Mayo. All had amyloid plaques in the brain but many showed no dementia symptoms before they died. Of the 342 participants, 195, or 57 percent, had the abnormal protein. Less than 5 percent of the healthy general population would be expected to have it.

Of those with the protein, 98 percent had dementia symptoms at the time of their death, versus only 81 percent of those without the protein.

"If there are 2 million people walking around this country with Alzheimer's but they're not showing any symptoms of it, think of how major that is," Josephs said of the protein's ability to signal risk. "If you have this protein, you're guaranteed to have symptoms. If you do not, you have a 20 percent chance you won't show symptoms even though you have the disease" as defined by amyloid in the brain, he said.

Dr. Eileen Bigio, an Alzheimer's specialist at Northwestern University in Chicago with no role in the work, said the results suggesting the protein plays a role in Alzheimer's were "pretty impressive."

The next step is to find a way to image it in living people, as is being done now with amyloid and tau.

More information: National Institute on Aging: www.nia.nih.gov/Alzheimers

Patient, family info: www.alzheimers.gov/

Alzheimer's Association: www.alz.org