

Researchers find dementia in diabetics differs from dementia in nondiabetics

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Researchers from Mayo Clinic's Florida campus say that dementia in some diabetics appears to be caused often by vascular disease in the brain, and the dementia that develops in people without diabetes is more likely associated with deposition of the plaque seen in people with Alzheimer's disease.

The findings will be presented at the Alzheimer's Association International Conference on Alzheimer's Disease 2010 meeting in Honolulu. They resulted from a study conducted among persons with Mexican ancestry but may have relevance to other populations, say the researchers. Also involved in the study were investigators from the University of California, San Francisco.

"This helps in understanding diabetes and dementia," says Mayo neurologist Neill Graff-Radford, M.D., who is presenting the findings. "It suggests that the [vascular dementia](#) seen in diabetics, which appears to be related to small blood vessel disease and strokes, can potentially be averted if development of diabetes is prevented."

The results agree with a number of autopsy studies conducted on patients with dementia and diabetes, in which vascular abnormalities were found to be related to the dementia but the Alzheimer's pathology of plaque and tangles was not, he says.

The findings also suggest that an experimental blood test to predict development of Alzheimer's disease may be more accurate than some

studies of people with dementia have suggested, because those studies included participants with [diabetes](#), says Dr. Graff-Radford. "We now propose that future studies of this test should take into account diabetic status," he says.

The test is based on discoveries made by Mayo neuroscientists, which measure the ratio of two different kinds of amyloid beta proteins in blood. Plaque found in the brains of Alzheimer's disease patients at autopsy started when the toxic form of amyloid beta, known as A β 42, began to be deposited.

Dr. Graff-Radford and his colleagues earlier discovered that if the A β 42 to A β 40 ratio in blood was low, A β 42 was likely being deposited in the brain and that Alzheimer's disease was developing. Five independent studies have confirmed that hypothesis. One found that the risk of Alzheimer's disease was up to 10 times greater in people with a low A β 42/A β 40 ratio. Three additional studies did not find this, and Dr. Graff-Radford suggests those studies may have included enough diabetic patients to skew the results.

The findings also make sense biologically, Dr. Graff-Radford says. Both the insulin hormone and amyloid beta proteins are degraded by the insulin-degrading enzyme (IDE). He adds that if the blood contains excess insulin, as is the case in diabetics, then IDE preferentially degrades insulin instead of amyloid. "That means there would be higher levels of both A β 42 and A β 40 in the blood of diabetics," he says.

This research comes from a sub-study of an ongoing National Institutes of Health-funded study, the Sacramento Area Latino Study on Aging (SALSA), which includes 1,789 people, primarily Mexican-American. In this study, the researchers analyzed A β 42/A β 40 ratios in 211 participants who developed dementia and 403 "controls" — participants matched in age and gender who remained cognitively normal.

Researchers found that among nondiabetics, only the A β 42/A β 40 low ratio was associated with [dementia](#). In diabetics, the ratio of A β 42 to A β 40 was not decreased.

Provided by Mayo Clinic

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