

Study shows vascular link in Alzheimer's disease with cognition

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Researchers in the Perelman School of Medicine at the University of Pennsylvania found that, across a variety of neurodegenerative diseases, cerebrovascular disease affecting circulation of blood in the brain was significantly associated with dementia. The researchers contend that people already exhibiting clinical features of Alzheimer's disease and other memory impairments may benefit from effective therapies currently available to reduce vascular problems. Thus, early management of vascular risk factors, such as high blood pressure and cholesterol, and adopting a 'heart healthy' diet as well as exercise and other lifestyles in midlife may delay or prevent the onset of dementia due to Alzheimer's and Parkinson's disease.

The link between cerebrovascular disease was strongest with Alzheimer's disease—as compared to other [neurodegenerative diseases](#) including [frontotemporal lobar degeneration](#), Lou Gehrig's disease or ALS and Parkinson's disease—and had the most pronounced effect in younger Alzheimer's patients, according to the study, published in the July 10 issue of *Brain*.

"While there was evidence already to suggest that vascular disease could play a role in neurodegenerative disease, this is the first study to compare the burden of vascular disease across neurodegenerative diseases with multiple, distinct or different origins," said senior author John Q. Trojanowski, MD, PhD, director of the National Institute on Aging-funded Alzheimer's Disease Core Center at the University of Pennsylvania and professor of Pathology and Laboratory Medicine. "We

were surprised to find such a strong link to vascular disease in Alzheimer's disease, especially in younger patients, in comparison to individuals with other neurodegenerative diseases."

Penn researchers analyzed 5715 cases from the National Alzheimer's Coordinating Center (NACC) database, which have been collected from 35 past and present NIA-funded Alzheimer's centers across the US since NACC was started in 1999. This is the first study to compare the presence of cerebrovascular disease across the whole spectrum of neurodegenerative diseases.

Nearly 80 percent of the more than 4600 Alzheimer's disease patients showed some degree of vascular pathology—defined as hardened or blocked blood vessels, tissue death due to lack of blood supply, or bleeding—in the brain, as compared to 67 percent in the control group of people with no remarkable brain disease pathology, and 66 percent in the Parkinson's pathology group.

"In the absence of any disease modifying therapies to change the course of the Alzheimer's and Parkinson's, we hope that the diligent use of existing treatments for vascular conditions and the implementation of campaigns promoting healthy lifestyles in young and middle aged people may have a positive impact on preventing or reducing dementia symptoms in Alzheimer's and Parkinson's disease " said lead study author Jon B. Toledo, MD, postdoctoral researcher at the University of Pennsylvania Perelman School of Medicine.

The study has implications from a public health perspective and for the design of clinical study cohorts that better represent the general population of people with cognitive impairment. In addition, drugs tested for Alzheimer's disease and other related dementias should consider the impact of the frequent coincident presence of cerebrovascular disease on the treatment response of new therapies for Alzheimer's, as most current

trials exclude patients with [vascular risk factors](#) or cardiovascular disease. Given the prevalence of [vascular problems](#), the researchers note that this large subset of dementia patients should be included in clinical trials to accurately represent the true population dealing with these neurodegenerative diseases, or, at least considered when predicting the clinical impact on patients in a real world population.

Provided by University of Pennsylvania School of Medicine

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