

Can large fluid-filled spaces in the brain help identify those at risk of dementia?

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People with enlarged fluid-filled spaces in the brain around small blood vessels may be more likely to develop cognitive problems and dementia over time than people without these enlarged spaces, according to a new study published in the January 27, 2021, online issue of *Neurology*.

Perivascular spaces are involved in clearing waste and toxins from the brain and may be associated with the brain changes associated with aging.

The study involved 414 people with an average age of 80. Participants took cognitive tests of thinking and memory skills and were assessed for the presence of dementia at the beginning of the study and every two years for eight years. The participants had MRI brain scans to check for enlarged perivascular spaces in two key areas of the brain at the start of the study and then every two years for eight years. The top quarter of the people with the largest number of enlarged perivascular spaces, designated as severe cases, were compared to those with fewer or no enlarged spaces.

"Severe perivascular space disease may be a marker for an increased risk of cognitive decline and dementia," said study author Matthew Paradise, M.B.Ch.B., M.Sc., of the University of New South Wales in Sydney, Australia. "More research is needed to understand how these enlarged spaces develop, as they could be an important potential biomarker to help with early diagnosis of dementia."

Researchers found that people with the largest number of enlarged perivascular spaces in both areas of the brain were nearly three times more likely to develop dementia during the study than people with fewer or no enlarged spaces.

A total of 97 people, or 24%, were diagnosed with dementia during the study. Of the 31 people with severe cases in both areas of the brain, 12 people, or 39%, were diagnosed with dementia.

The people with severe enlargement of perivascular spaces in both areas of the brain were also more likely to have greater decline four years later on their overall scores of cognition than the people with mild or absent enlargement of spaces.

The results persisted after researchers adjusted for other factors that could affect either scores on tests or the development of dementia, such as age, high blood pressure and diabetes. The researchers also took into account other signs of disease in the [small blood vessels](#) in the brain, which can also be a sign of risk of dementia.

"These results suggest that there is an independent mechanism for the perivascular spaces as a biomarker of cognitive impairment and [dementia](#) apart from being a general marker of disease in the small vessels," Paradise said. "For example, enlarged perivascular spaces may be a biomarker of impaired waste clearance in the brain."

Paradise noted that the study does not prove that

enlarged perivascular spaces cause these thinking and memory problems over time; it only shows an association.

Limitations of the study include that cognitive test data was only available over four years and that imaging data could have missed some enlarged perivascular spaces in the [brain](#).

Provided by American Academy of Neurology

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