

### Clogged brain drains may be an early warning sign of Alzheimer's



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Scientists at Nanyang Technological University in Singapore (NTU Singapore) have found a new clue that could help doctors detect Alzheimer's disease earlier.

They discovered that people showing early signs of Alzheimer's often have blocked brain drainage pathways, which can be seen in regular brain scans. These blockages may happen before the usual symptoms of memory loss or confusion appear.

The blocked areas are called "enlarged perivascular spaces." These are small gaps around blood vessels in the brain that help clear out waste, including toxic substances like beta amyloid and tau—proteins that are found in high levels in people with Alzheimer's.

When these drainage paths are clogged, the brain can't get rid of waste as well, possibly leading to damage and disease.

Associate Professor Nagaendran Kandiah from NTU's Lee Kong Chian School of Medicine led the study. He said that because these enlarged spaces can be seen on standard MRI scans, they could be used as a new way to detect Alzheimer's early—without the need for expensive or invasive tests.

The study was done in Singapore and included nearly 1,000 people from different backgrounds. Some participants had no memory or thinking problems, while others had

mild cognitive impairment (MCI), a condition that can lead to Alzheimer's. Researchers found that people with MCI were more likely to have these enlarged brain drainage spaces.

The study is especially important because most Alzheimer's research has focused on Caucasian populations. But Alzheimer's affects different ethnic groups in different ways.

For example, one gene linked to Alzheimer's—apolipoprotein E4—is found in over 50% of Caucasian patients with dementia but in less than 20% of dementia patients in Singapore. This shows why studies in Asian populations are so important.

To better understand how these clogged brain drains relate to Alzheimer's, researchers looked at participants' blood for signs of the disease.

They measured seven substances known to be linked to Alzheimer's, including beta amyloid and tau proteins. People with enlarged perivascular spaces were more likely to have high levels of these substances, suggesting they were at higher risk for Alzheimer's.

The researchers also looked at white matter damage, another common brain change in Alzheimer's. Both white matter damage and the clogged drainage spaces were linked to Alzheimer's-related changes in the blood.

But among people with mild cognitive problems, the link between clogged drains and Alzheimer's risk was stronger. This means the clogged spaces might be one of the earliest signs of the disease.

Doctors usually look at white matter damage to spot Alzheimer's, but this study suggests that looking at enlarged perivascular spaces on brain scans might be even more helpful—especially in the early stages.

Dr. Rachel Cheong, a senior geriatric specialist in Singapore, said this discovery could help identify people at higher risk before they show major symptoms.

Dr. Chong Yao Feng, a neurologist at the National University Hospital, said the study also changes how doctors think about Alzheimer's and brain blood vessel diseases. These two conditions have often been treated as separate problems, but this research shows they might work together to cause memory decline.

Doctors reading brain scans need to consider that when these enlarged drainage spaces appear, the patient may be at risk for Alzheimer's—not just blood vessel problems. That means more tests or follow-ups may be needed to find out what's really going on.

The NTU researchers plan to continue tracking participants over time to see how many go on to develop Alzheimer's.

If other studies in different countries find the same results, checking for clogged brain drains on MRI scans could become a regular part of early Alzheimer's screening. This could give doctors a new way to help patients earlier and possibly slow the disease before major brain damage occurs.

If you care about Alzheimer's disease, please read studies that [bad lifestyle habits can cause Alzheimer's disease](#), and [strawberries can be good defence against Alzheimer's](#). For more information about brain health, please see recent studies that [oral cannabis extract may help reduce Alzheimer's symptoms](#), and [Vitamin E may help prevent Parkinson's disease](#).

The study is [published](#) in Neurology.

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