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Clogged brain drains may predict Alzheimer's before symptoms start

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Researchers at Nanyang Technological University (NTU) in Singapore have discovered that clogged "drains" in the brain may be an early warning sign of Alzheimer's disease.

These brain drains, known as enlarged perivascular spaces, are responsible for clearing out toxic waste like beta amyloid and tau proteins, which are often found in people with Alzheimer's.

The study, published in the journal Neurology, shows that when these spaces get blocked, waste builds up in the brain. This can lead to damage associated with cognitive decline. These changes can be seen on standard MRI brain scans, making it easier for doctors to spot risks early without extra testing.

The team analyzed brain scans and blood samples from nearly 1,000 people in Singapore. Some of the participants were healthy, while others had early signs of cognitive issues, such as mild memory or thinking problems—known as mild cognitive impairment, a possible early stage of dementia.

Their research found that people with early cognitive problems were more likely to have clogged brain drains. These clogged spaces could be seen clearly on regular MRI brain scans. Importantly, people with enlarged perivascular spaces also had higher levels of harmful proteins linked to Alzheimer's.

The scientists looked at seven different biochemical markers in the blood—such as beta amyloid and tau protein levels—which are associated with Alzheimer's. Four of

these markers showed strong links to the clogged brain drains, indicating that the condition may be a reliable early indicator of Alzheimer's risk.

They also compared the impact of another known Alzheimer's sign—damage to the brain's white matter—and found that in people with mild cognitive impairment, the clogged brain drains had a stronger link to Alzheimer's indicators than white matter damage.

This is important because white matter damage is already used in medical practice to assess dementia risk, but it might not be the earliest sign. These new findings suggest that paying attention to perivascular space enlargement on MRI scans may help doctors detect Alzheimer's risk much earlier, said Associate Professor Nagaendran Kandiah, who led the study.

Other experts who were not part of the study agreed that these findings could be very useful. Dr. Rachel Cheong from Khoo Teck Puat Hospital said that enlarged perivascular spaces may be a new clue in detecting Alzheimer's risk before symptoms become serious.

Dr. Chong Yao Feng from the National University Hospital added that although Alzheimer's and blood vessel problems in the brain were once thought to be separate, this study shows they may actually work together. Doctors should consider both when evaluating brain scans. If a patient comes in with cognitive symptoms and their brain scan shows signs of cerebrovascular disease, doctors should also consider the possibility of Alzheimer's.

The NTU team plans to keep following the study participants to see if those with clogged brain drains do indeed go on to develop Alzheimer's. If confirmed, this simple MRI scan finding could be added to the tools doctors use to detect Alzheimer's early and possibly prevent it from getting worse.

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.

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