

White matter changes in brain found in frontotemporal dementia

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Areas of brain damage called white matter hyperintensities are commonly linked to vascular health problems. They have also been linked to Alzheimer's disease. Now a new study has shown that white matter hyperintensities are also found in frontotemporal dementia. The study is published in the February 17, 2021, online issue of *Neurology*. Frontotemporal dementia, which often affects people under the age of

65, mainly results in changes in personality, behavior and problems with language rather than memory.

"We were expecting to see similar amounts of [white matter hyperintensities](#) in frontotemporal dementia and Alzheimer's disease, but we actually found higher levels in people with frontotemporal dementia," said study author Ramón Landin-Romero, Ph.D., of the University of Sydney in Australia. "We also expected to see that people with more severe disease would have more white matter hyperintensities, regardless of disease, but that was only true in people with frontotemporal dementia."

The study involved 64 people with frontotemporal dementia, 65 people with Alzheimer's disease and 66 people without dementia who had [brain](#) scans and other tests. The participants were followed for an average of two years. Autopsy information was available for 13 of the people with frontotemporal dementia and five of the people with Alzheimer's disease.

The researchers found that the total volume of white matter hyperintensities in the brain was larger in people with frontotemporal dementia than in the people with Alzheimer's disease or the healthy control group. The average volume of white matter hyperintensities in people with frontotemporal dementia was 0.76 milliliters (mL) compared to 0.40 mL in people with Alzheimer's disease and 0.12 mL in people without dementia.

The amount of white matter hyperintensities was associated with the severity of a person's frontotemporal dementia, including the severity of their symptoms and everyday difficulties, but it was not associated with having vascular risk factors such as [high blood pressure](#) and high cholesterol as was expected.

"In general, white matter hyperintensities have been associated with these [vascular risk factors](#), so these results suggest that white matter hyperintensities are partly independent of vascular factors and associated with the progressive loss of brain integrity, more specifically the loss of brain cells, due to frontotemporal dementia," Landin-Romero said.

"White matter hyperintensities should be viewed as a core feature of frontotemporal [dementia](#) and Alzheimer's disease that can contribute to cognitive problems, not simply a marker of vascular disease."

The researchers also found that higher amounts of white matter hyperintensities in certain areas of the brain were associated with worse cognitive performance. For example, in both [frontotemporal dementia](#) and Alzheimer's disease, increased white matter hyperintensities in the [corpus callosum](#), a bundle of white matter fibers connecting the left and right hemispheres of the brain, was associated with attention problems.

A limitation of the study was that autopsy information was available for only a small number of cases, so the underlying molecular cause of the white matter hyperintensities could not be determined for participants.

Provided by American Academy of Neurology

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