
RSNA Press Release

High Blood Pressure May Heighten Effects of Alzheimer's Disease

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At A Glance

- Hypertension reduces cerebral blood flow in people with Alzheimer's disease.
- Arterial spin-labeled MRI is a novel, noninvasive imaging technique that can measure cerebral blood flow.
- Approximately 50 million Americans have hypertension.

CHICAGO — Having hypertension, or high blood pressure, reduces blood flow in the brains of adults with Alzheimer's disease, according to a new study presented today at the annual meeting of the Radiological Society of North America (RSNA).

"While hypertension is not a cause of Alzheimer's disease, our study shows that it is another hit on the brain that increases its vulnerability to the effects of the disease," said study co-author Cyrus Raji, scientist and M.D. and Ph.D. candidate at the University of Pittsburgh where the study was conducted.

Hypertension is a condition in which the blood circulates through the arteries with too much force. According to the National Heart, Lung and Blood Institute, approximately 50 million Americans have hypertension. People with hypertension are at elevated risk for heart attack, stroke and aneurysm. Recently, there has been mounting evidence tying cardiovascular health to brain health.

"This study demonstrates that good vascular health is also good for the brain," said co-author Oscar Lopez, M.D., professor of neurology and psychiatry at the University of Pittsburgh. "Even in people with Alzheimer's disease, it is important to detect and aggressively treat hypertension and also to focus on disease prevention."

For the study, the researchers used arterial spin-labeled magnetic resonance imaging (MRI), which can measure blood flow in the brain, to image 68 older adults. Arterial spin-labeled MRI is a novel, noninvasive technique that requires no external contrast agent.

The patient group included 48 normal individuals, including 38 with hypertension and 10 without; 20 Alzheimer's patients, including 10 with hypertension and 10 without; and 20 adults with mild cognitive impairment, 10 with hypertension and 10 without. Mild cognitive impairment, which affects brain functions such as language, attention and reasoning, is a transition stage between normal aging deficits in the brain and greater levels of dementia.

The MRI results showed that in all patient groups blood flow in the brain was substantially decreased in patients with hypertension compared to those without. Cerebral blood flow was lowest among the Alzheimer's patients with hypertension, but the normal group with hypertension showed significantly lower cerebral blood flow than the normal group without hypertension.

"These results suggest that by changing blood flow to the brain, hypertension—treated or untreated—may contribute to the pathology of Alzheimer's," Raji said.

Co-authors are C. Lee, M.D., W. Dai, Ph.D., J. Becker, Ph.D., L. Kuller, M.D., H. Gach, Ph.D., et al.

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RSNA is an association of more than 41,000 radiologists, radiation oncologists, medical physicists and related scientists committed to excellence in patient care through education and research. The Society is based in Oak Brook, Ill. (RSNA.org)

Editor's note: The data in these releases may differ from those in the printed abstract and those actually presented at the meeting, as researchers continue to update their data right up until the meeting. To ensure you are using the most up-to-date information, please call the RSNA Newsroom at 1-312-949-3233.