Cardiovascular Risk Factors May Predict Alzheimer's Disease

An imaging study shows that specific cardiovascular risk factors, such as alcohol use, smoking, obesity and diabetes, correlate with smaller regional brain volumes that may be early indicators of Alzheimer's disease and dementia. The findings are reported in the journal *Radiology*.

Previous studies have linked cardiovascular risk factors and cognitive decline. However, the new findings "give us a more concrete idea about the relationship between specific vascular risk factors and brain health," says Kevin S. King, MD, assistant professor of radiology at the Keck School of Medicine of the University of Southern California in Los Angeles.

Dr. King's study focused on specific risk factors and examined three main brain regions, including the hippocampus, precuneus and posterior cingulate cortex. As each region plays a role in memory retrieval, grey matter volume loss in these areas may be a predictor of Alzheimer's disease and dementia.

Dr. King and colleagues examined results from 1,629 individuals in the Dallas Heart Study (DHS). Participants were divided into two age groups: 805 patients under age 50, and 824 age 50 and older. The researchers evaluated the participants' data from the initial baseline visit, which included laboratory and clinical analysis. They also analysed patient data from the follow-up visit seven years later consisting of a brain MRI and cognitive test, measuring mild cognitive impairment and preclinical Alzheimer's disease.

By comparing the initial visit in which cardiovascular risk factors were identified to the MRI results and cognitive scores, the researchers were able to distinguish the specific risk factors of alcohol use, smoking, diabetes, and obesity and their relationship to smaller volumes in the three targeted regions of the brain. The results confirmed that lower cognitive test scores correlated with lower brain volumes in each area. Other key findings include:

- Alcohol use and diabetes correlated with smaller total brain volume.
- Smoking and obesity were associated with reduced volumes of the posterior cingulate cortex, the area of the brain connected with memory retrieval as well as emotional and social behaviour.
- Alcohol use and smoking were linked with lower hippocampal mass.
- Alcohol use, obesity and high fasting blood glucose numbers correlated with reduced precuneus size.

In addition, the findings suggest that in patients age 50 and older, diminished hippocampal and precuneus volumes may be early risk indicators for cognitive decline, while smaller posterior cingulate volumes are better predictors in patients under age 50.

Source: RSNA
Image credit: Keck School of Medicine, USC

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