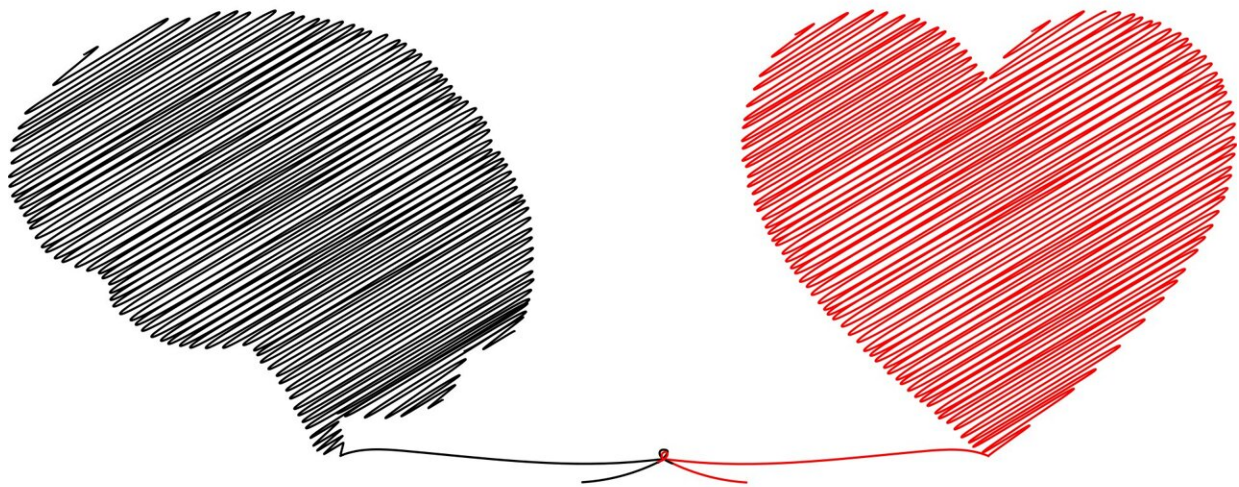


Study finds high prevalence of hidden brain changes in people with heart disease

March 26 2024



Credit: Pixabay/CC0 Public Domain

A new analysis involving over 13,000 people has found changes to blood vessels in the brain that can increase the risk of stroke and dementia are common in people with a range of heart conditions, regardless of whether they have experienced a stroke.

The new research, published today in [Neurology](#), is the most comprehensive systematic review of 'hidden' brain changes in people

with a range of heart conditions to date.

Lead author Dr. Zien Zhou from The George Institute for Global Health said that identifying these changes could play an important role in choosing treatments for these patients.

"Although people with [heart disease](#) are two to three times more likely than the general population to have changes in their brain's vascular system, they're often overlooked because these patients don't routinely undergo brain imaging unless they have suffered a stroke," he said.

"But it can make them more susceptible to the risk of brain bleeds from medications commonly used to treat or prevent blood clots—intracranial hemorrhage is a life-threatening complication with no proven treatment and a survival rate of less than 50 percent."

Changes to [blood vessels](#) in the brain that can only be detected by brain imaging, such as silent brain infarction (SBI) and cerebral small vessel disease (CSVD), are known to occur more commonly in older people or those who have hypertension. While not sufficient to cause obvious neurological symptoms, they can result in subtle neurological deficits and increase the longer-term risk of stroke or dementia.

To determine the prevalence of these hidden or covert cerebrovascular changes in adults with [atrial fibrillation](#), [coronary artery disease](#), [heart failure](#) or cardiomyopathy, heart valve disease, and patent foramen ovale (a hole in the heart), George Institute researchers conducted a [meta-analysis](#) of 221 observational studies published between 1988 and 2022.

The findings showed that in people with heart disease:

- approximately one-third had any form of SBI
- a quarter had lacune (small cavities where [neural tissue](#) has died

- after a previous blockage or leakage from small arteries)
- two-thirds had white matter lesions (damage to the protective coating around [nerve fibers](#))
- a quarter had evidence of asymptomatic microbleeds in the brain tissue, and
- over one half had brain atrophy (a shrinking of the brain due to loss of neurons or connections between neurons).

The prevalence of these brain changes was generally the same between those with and without a recent stroke, and there were no apparent sex differences in the results.

Dr. Zhou said the study also confirmed that heart disease is one of the main causes of these changes that reflect brain 'frailty.'

"While several potential mechanisms of the association between heart disease and hidden cerebrovascular injury have been proposed, the two conditions share common risk factors such as aging, hypertension, type 2 diabetes, hyperlipidemia, and smoking," said Dr. Zhou.

"It's possible that a gradual decline in cardiac output in some patients with heart disease might affect how much blood is reaching the brain tissue, contributing to vascular changes and cognitive dysfunction in these patients," he added.

"It's also possible that hidden brain changes and cognitive dysfunction are a consequence of tiny [blood clots](#) traveling to the brain through the arterial circulation after forming in the heart."

Dr. Zhou said that more research was needed to look at the exact causes of these [brain changes](#) and the implications for managing these patients.

"We need to know whether performing an additional MRI in those

considered for anticoagulation therapy—which is required for most people with heart disease—would be cost-effective in terms of preventing unwanted side effects," he said.

"But refining the risks of brain clots and bleeds from anticoagulants and using this information to make the best treatment choice could improve treatment safety for people with heart disease."

More information: Zien Zhou et al, Covert Cerebrovascular Changes in People With Heart Disease, *Neurology* (2024). [DOI: 10.1212/WNL.0000000000209204](https://doi.org/10.1212/WNL.0000000000209204)

Provided by George Institute for Global Health

Citation: Study finds high prevalence of hidden brain changes in people with heart disease (2024, March 26) retrieved 27 April 2024 from <https://medicalxpress.com/news/2024-03-high-prevalence-hidden-brain-people.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--