



RESEARCH

INFORMATION

Symptoms of small vessel disease: identifying unrecognised symptoms of disease of the small blood vessels in the brain



AIMS

Disease in the small blood vessels in the brain, which are visible on scans, are a common cause of dementia and stroke. Previous research suggests the early disease visible on brain scans could be linked to early warning symptoms. Determining the presence of these symptoms could help doctors to identify patients at risk of dementia and stroke earlier. We investigated whether people with these abnormalities on their brain scans are more likely to experience mild problems with their mood, thinking and walking.



KEY FINDINGS

- Changes on brain scans after a stroke may be linked to subtle symptoms, e.g. depression, brain fog, and possibly fatigue, falls, unsteadiness, episodes of confusion.
- Brain scan changes may also be linked with relatives' reports of decline in thinking and memory and daily functioning.
- Changes in the behaviour of people with and without dementia may be linked to changes on brain scans over time.
- Some of these symptoms might be an early warning sign of future health problems such as dementia and stroke.
- However, some of these symptoms are common in the general population so more work is needed to find out whether they are more important in specific individuals, e.g. people who have had a stroke in the past, people with dementia.





WHAT DID THE STUDY INVOLVE?

We gathered all of the published scientific evidence on the symptoms that are linked to small vessel disease. We also invited 200 people who had had a recent stroke to attend our research facility in Edinburgh to complete ≥ 4 brain scans, assessments, and detailed surveys about the symptoms that they were experiencing. We tracked their brain scans to see whether changes developed in their small blood vessels over the course of one year. We also looked at mood symptoms in a different group of 672 healthy community-dwelling older adults, with and without thinking and memory problems, to see whether these issues were associated with worsening abnormalities on brain scans over six years.

During study development, we involved patients and the public: individuals who had had a stroke, individuals with dementia and their carers, and lay panel members from local and national research organisations. We wanted to hear about their experiences of post-stroke and dementia symptoms. Based on these conversations, we adapted our study design to ensure that it measured what patients and relatives thought were the most relevant outcomes e.g. neuropsychiatric symptoms.



WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

- In the year after a stroke, some patients (>20%) show signs of active disease changes involving small blood vessels on their scans.
- These small blood vessel abnormalities were linked with the presence (vs absence) of specific symptoms such as depression, brain fog, and possibly with fatigue, falls, unsteadiness, episodes of confusion, and with relatives' reports of decline in thinking and memory and daily functioning.
- People that had more chronic, widespread damage involving the small blood vessels on their brain scans were more likely to experience symptoms including falls, brain fog, lack of motivation, and unsteadiness
- In people attending memory clinics, abnormal changes in behaviour were linked to worsening small vessel damage on brain scans.
- Finally, in older people living in the community, we found that people with apathy (a lack of motivation) had greater progression of small vessel damage on their brain scans.

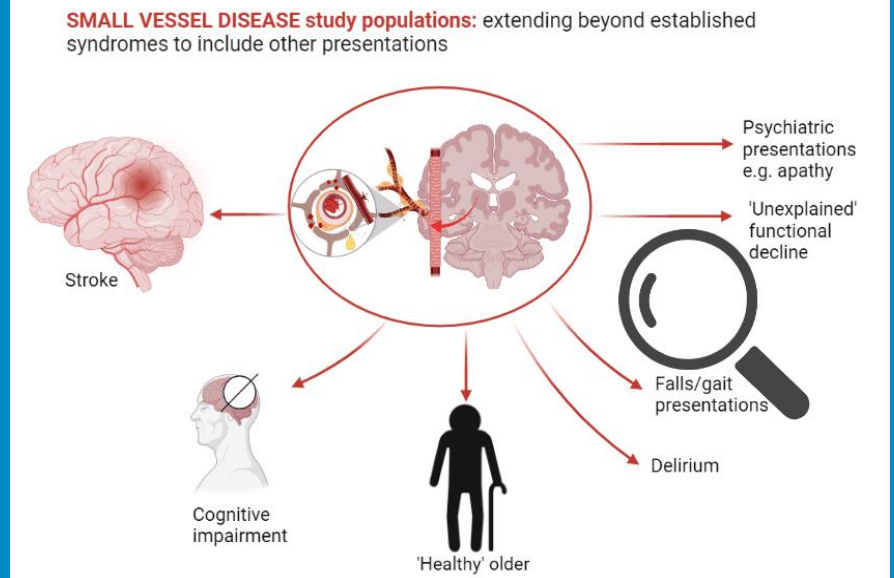


WHAT IMPACT COULD THE FINDINGS HAVE?

- Tracking the symptoms of small vessel disease in its early stages could help to identify patients at risk of dementia and stroke earlier. Identifying the symptoms could allow earlier treatments of small vessel disease to be tested to prevent late consequences such as dementia/ stroke
- Future clinical research should focus on this area in more detail, involve different groups of people (see Figure 1), and include larger numbers of people
- Now that we know that disease affecting small blood vessels in the brain can be identified earlier, more funding for studies into this area is important, especially as there is currently no specific treatment for small vessel disease.



Figure 1. Apart from people affected by stroke and thinking/memory (cognitive) problems, it would also be useful to research disease involving brain small blood vessels across a wider range of patients in future



HOW WILL THE OUTCOMES BE DISSEMINATED?

- Our study participants have received a newsletter with preliminary findings and further newsletters will be sent out as new findings emerge.
- We are presenting the study results at UK-based and international conferences and publishing the findings in international journals.
- We plan to inform the public about these findings when findings are more complete e.g. science festivals
- This will highlight our findings to patients, the public, other researchers, doctors and funders, helping to drive further research into detecting people at high risk of dementia and stroke earlier.

CONCLUSION

Overall, we found that there are links between symptoms involving mood, thinking, and walking, and the progression of disease in the small blood vessels on brain scans. This information may help to identify which people are at higher risk of developing vascular dementia and stroke much earlier. This could be important for the future prevention of these disabling conditions.

RESEARCH TEAM & CONTACT

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Additional Information

Project completed 30th September 2021
Amount of funding received = £221,372