MedicalXpress

Changes in the eye connected to a decline in memory

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Researchers in the US have found that changes in the blood vessels of the eye are associated with a greater decline in people's memory and language skills over a 20-year period. Their findings are published today in the scientific journal, *Neurology*.

It is difficult to look inside the brain to directly observe changes that might lead to a decline in memory and thinking skills. The retina – a light sensitive layer at the back of the eye – is closely related to brain tissue and researchers are investigating whether changes revealed through scanning the eye could offer clues about processes underway in the brain.

In this study, scientists looked to see if specific changes to the blood supply in people's eyes were associated with a decline in their memory and language abilities. To do this, researchers worked with people with an average age of 60 at the start of the study and measured their cognitive skills over a 20-year period.

The volunteers took part in three types of cognitive test that measured memory, verbal fluency and attention. To get an idea of how memory and thinking skills changed over time, researchers compiled scores from these three tests, which were repeated at three points over the 20-year period.

Researchers also captured images of participants' eyes using a technique to visualise small changes to blood vessels in the retina. Based on these

measures, people's eyes were categorised as either having no signs of disease, displaying mild signs or showing moderate or severe changes.

The scientists then matched the findings from these images and the scores from the cognitive tests, from over 9,000 people. Their results showed that more severe changes in the eye were associated with a greater loss in memory and language skills.

Dr. Sara Imarisio, Head of Research at Alzheimer's Research UK, said:

"Exploring how our eyes can shed light on changes underway in the brain is an area that is attracting more and more research attention. As the brain is so well protected we can only visualise it indirectly, often through expensive brain scans. The retina offers a potentially valuable window into the brain, and it can be studied with cheaper, non-invasive eye scans.

"While this research highlights a specific change in the retina that may be linked to a decline in memory and thinking skills, it didn't investigate whether these changes were related to a higher risk of dementia. There is a desperate need for better ways to diagnose the diseases that cause dementia so that people can get access to support, treatments and opportunities to take part in research. Further studies will be needed to evaluate whether techniques like this could one day support doctors making a diagnosis in the clinic and continued investment in research is vital to ensure this progress."

Provided by Alzheimer's Research UK