

Brain scans detect Alzheimer's before onset of symptoms

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Researchers in New Mexico and Croatia have used a brain scanning technique known as magnetoencephalography, or MEG, to search for a new biological fingerprint of Alzheimer's disease. The results of the study are published today in *Human Brain Mapping*.

Alzheimer's disease affects 500,000 people in the UK alone, with symptoms manifesting themselves in different ways. Diagnosing Alzheimer's can be difficult as symptoms are often subtle, and in the early stages of disease it can be difficult to distinguish Alzheimer's from age-related forgetfulness and other [health conditions](#). Currently, researchers are searching for a biological fingerprint of very early changes in the brain, which occur even before the first symptoms of Alzheimer's show. This will help to identify those in the earliest stages of the disease most likely to benefit from new treatments. MEG scans are one way that activity in the brain can be measured, and were used to search for indicators of Alzheimer's in this study.

MEG works by measuring very small magnetic signals produced when the brain is active. This type of brain scanning works very quickly and this study examined whether changes in activity in an area of the brain known as the [medial prefrontal cortex](#) (mPFC) could be used as an indicator of Alzheimer's disease.

By playing repeated short noises, scientists stimulated the mPFC and measured the activity in this brain region using MEG scans. The study tested this method on 20 people, finding that sounds were able to

stimulate this area of the brain in healthy volunteers. However, the researchers found that in people with Alzheimer's, the auditory triggers were not able to activate this region of the brain.

People who had lower scores on memory and thinking tests, which could indicate the early stages of Alzheimer's, also showed lack of signal on the brain scan test. The scientists concluded that this non-invasive technique may be able to detect Alzheimer's before the appearance of the first symptoms.

Dr Rosa Sancho, Head of Research at Alzheimer's Research UK said:

"We know that damaging changes start to take place in the brain many years before symptoms of Alzheimer's appear, and researchers are honing in on new ways to detect the earliest signs of the [disease](#)."

"This type of non-invasive brain scan will need to be validated in larger groups of people before we can know how accurate and sensitive it is at picking up early brain changes linked to Alzheimer's. To make comparisons against other current diagnostic measures, future studies need to assess the technique in this study against them."

"There was no evidence in the study that, those healthy volunteers with lower scores in the memory and thinking tests and less activity in the [brain](#) scans developed Alzheimer's, so a longer study following the volunteers over time would be a critical step."

"Before any new diagnostic technique was used for Alzheimer's in the clinic, we'd need to be confident that it was unlikely to wrongly flag up those who were healthy or miss those who were in need of further support. It can be very challenging to diagnose dementia, particularly as the symptoms overlap with other health conditions, and research to develop new and better approaches is crucial to improve the diagnosis of

dementia in future."

Provided by Alzheimer's Research UK

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