Study: New brain scan better detects earliest signs of Alzheimer's disease in healthy people

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A new type of brain scan, called diffusion tensor imaging (DTI), appears to be better at detecting whether a person with memory loss might have brain changes of Alzheimer's disease, according to a new study published in the January 6, 2010, online issue of *Neurology*®, the medical journal of the American Academy of Neurology.

"As better medicines for Alzheimer's disease become available, it will be important to identify people at high risk for the disease as early and accurately as possible so treatment can be most effective," said Norbert Schuff, PhD, with the University of California and the Veterans Affairs Medical Center, San Francisco, author of an editorial about the research.

For the study, 76 healthy people in Rome aged 20 to 80 underwent DTI-MRI brain scanning, which is more sensitive than traditional MRI for detecting changes in brain chemistry, thereby mapping fiber tracts that connect brain regions. The researchers examined DTI changes in the hippocampus, a region of the brain that is critical to memory and one that is involved in Alzheimer's disease.

Participants were given verbal tests and tests that measured visual perception of space between objects. Scientists compared the brain scans and found that changes in DTI imaging better explained declines in memory than did measuring hippocampus volume through a traditional MRI. They found that mean diffusivity in the hippocampus better predicted verbal and spatial memory performance in the participants, especially in those who were 50 years of age or older.

"Our findings show this type of brain scan appears to be a better way to measure how healthy the brain is in people who are experiencing memory loss. This might help doctors when trying to differentiate between normal aging and diseases like Alzheimer's," said study author Giovanni Carlesimo, PhD, with Tor Vergata University in Rome, Italy. "DTI, along with MRI, could serve as an important tool in understanding how and why a person experiences memory decline."

Provided by American Academy of Neurology