

Study identifies chemical changes in brains of people at risk for Alzheimer's disease

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A brain imaging scan identifies biochemical changes in the brains of normal people who might be at risk for Alzheimer's disease, according to research published in the August 24, 2011, online issue of *Neurology*, the medical journal of the American Academy of Neurology.

The study of 311 people in their 70s and 80s with no [cognitive problems](#), from the population-based Mayo Clinic Study of Aging, used an advanced [brain](#) imaging technique called proton MR spectroscopy to see if they had abnormalities in several brain metabolites that may be biomarkers for Alzheimer's disease. They also had [PET scans](#) to assess the level of amyloid-beta deposits, or plaques, in the brain that are one of the first signs of changes in the brain due to Alzheimer's disease. The participants were also given tests of memory, language and other skills.

"There is increasing evidence that Alzheimer disease is associated with changes in the brain that start many years before symptoms develop," said Jonathan M. Schott, MD, of the [Dementia](#) Research Centre, University College London in England and a member of the American Academy of Neurology, who wrote an editorial accompanying the study. "If we could identify people in whom the disease process has started but symptoms have not yet developed, we would have a potential window of opportunity for new treatments—as and when they become available—to prevent or delay the start of memory loss and cognitive decline."

The study found that 33 percent of the participants had significantly high levels of amyloid-beta deposits in their brains. Those with high levels of

amyloid-beta deposits also tended to have high levels of the brain metabolites myoinositol/creatine and choline/creatine. People with high levels of choline/creatine were more likely to have lower scores on several of the cognitive tests, regardless of the amount of amyloid-beta deposits in their brains.

"This relationship between amyloid-beta deposits and these metabolic changes in the brain are evidence that some of these people may be in the earliest stages of the disease," said study author Kejal Kantarci, MD, MSc, of the Mayo Clinic in Rochester, Minn., and a member of the American Academy of Neurology. "More research is needed that follows people over a period of years to determine which of these individuals will actually develop the disease and what the relationship is between the amyloid deposits and the [metabolites](#)." At the present time, MR spectroscopy cannot be used for diagnosis.

Provided by American Academy of Neurology

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