

# Novel PET staging system may help monitor Alzheimer disease

July 18 2019

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(HealthDay)—A staging system of  $\beta$ -amyloid ( $A\beta$ ) accumulation may be

useful for monitoring patients throughout the course of Alzheimer disease (AD), according to a study published online July 17 in *JAMA Neurology* to coincide with the annual Alzheimer's Association International Conference, held from July 14 to 18 in Los Angeles.

Niklas Mattsson, M.D., Ph.D., from Lund University in Sweden, and colleagues constructed a longitudinally valid in vivo staging system for AD using amyloid positron emission tomography (PET) with data from 741 persons: 304 without [cognitive impairment](#), 384 with mild cognitive impairment, and 53 with AD dementia. Early, intermediate, and late regions of A $\beta$  accumulation were determined using cerebrospinal fluid (CSF) A $\beta$ 42 and fluorine 18-labeled florbetapir data.

The researchers found that 98.4 percent of the 2,072 PET scans from 741 participants were unambiguously staged. Participants with stage 0 at baseline had a 14.7 percent probability of progression to a higher stage (71.4 and 53.1 percent for stages 1 and 2, respectively); 0.9 percent of the 741 patients reverted to a lower stage. Even after adjustment for [clinical diagnosis](#), higher stages correlated with lower CSF A $\beta$ 42 concentrations, greater CSF P-tau and CSF T-tau, and accelerated cognitive decline and atrophy. Key findings were replicated in a second cohort of 474 patients. When using the transcriptome from the Allen Human Brain Atlas, the regions of different stages differed by gene expression profiles.

"We describe an A $\beta$  PET staging system that may be useful for [early diagnosis](#), drug development, and to study disease mechanisms," the authors write.

One author disclosed [financial ties](#) to the [pharmaceutical industry](#); one author disclosed ties to the Alzheimer's Disease Neuroimaging Initiative, which funded data collection and sharing, and was partially funded by biopharmaceutical companies.

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Citation: Novel PET staging system may help monitor Alzheimer disease (2019, July 18)  
retrieved 1 May 2024 from  
<https://medicalxpress.com/news/2019-07-pet-staging-alzheimer-disease.html>

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