

New molecular imaging agent may help visualize early stages of Alzheimer's disease

June 7 2010

A multinational clinical trial revealed at SNM's 57th Annual Meeting presents a novel imaging agent that could be the next major breakthrough for the early detection of Alzheimer's disease -- a slow but fatal neurodegenerative disease. The new agent is used in conjunction with a molecular imaging technique called positron emission tomography (PET) and works by binding to beta-amyloid, a naturally-occurring protein that builds up in the brain and is thought to be a precursor to Alzheimer's. Scientists aim to hone beta-amyloid imaging and put it to use with new drug treatments that could potentially slow or even halt the disease before irreparable damage and dementia set in.

"Early detection and treatment of Alzheimer's disease is essential and current methods of diagnosis, such as cognitive tests, are helping to catch the disease at its advanced stages, when the patient is already suffering from distinct cognitive impairments," said Osama Sabri, M.D., Ph.D., professor, director and chairman of [nuclear medicine](#) at Leipzig University, Leipzig, Germany. "The imaging of beta-amyloid may assist clinicians in differentiating Alzheimer's disease from other types of dementia. Additionally, this research will help to maximize the quality of life for patients who are still in the early stages of Alzheimer's and who still have the ability to play an active role in planning for the future."

Alzheimer's disease kills by damaging and eventually destroying [neurons](#) throughout the brain, incapacitating critical centers of the brain that control memory and thinking, as well as motor skills and essential commands to the body's other vital organs. In the past, making a

concrete diagnosis of Alzheimer's disease has proven difficult and was only successful postmortem.

Complicating matters is the fact that there are different forms of [dementia](#) and diagnosis can take years. The new imaging agent, called Florbetaben, offers direct visualization of beta-amyloid during the [pathogenesis](#), or development, of disease. Monitoring the aggregation and spread of beta-amyloid through [molecular imaging](#) may help clinicians to determine the progression of the disease and gather information about its impact at the cellular and molecular levels.

In the study, 81 patients believed to have Alzheimer's disease and 69 healthy subjects, ages 55 and older, were imaged with Florbetaben and PET in 18 different centers across three continents to test the agent's potential for diagnosing Alzheimer's disease both visually and quantitatively by normalizing to an amyloid-free reference region in the brain and analyzing the segmented data. Both methods proved to be highly accurate in diagnosing the disease. There are other agents in use and currently in development for imaging beta-amyloid using different molecular compounds to target the protein. However, Florbetaben and other fluorine-based compounds may be effective for routine use due to the prevalence and widespread use of the compound in molecular imaging.

Provided by Society of Nuclear Medicine

Citation: New molecular imaging agent may help visualize early stages of Alzheimer's disease (2010, June 7) retrieved 23 April 2024 from <https://medicalxpress.com/news/2010-06-molecular-imaging-agent-visualize-early.html>

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