Atypical form of Alzheimer's disease may be present in a more widespread number of patients

Jacksonville, Fla., USA (May 1, 2014) — Neuroscientists at Mayo Clinic in Florida have defined a subtype of Alzheimer's disease (AD) that they say is neither well recognized nor treated appropriately. The variant, called hippocampal sparing AD, made up 11 percent of the 1,821 AD-confirmed brains examined by Mayo Clinic researchers — suggesting this subtype is relatively widespread in the general population. The Alzheimer's Association estimates that 5.2 million Americans are living with AD. And with nearly half of hippocampal sparing AD patients being misdiagnosed, this could mean that well over 600,000 Americans make up this AD variant, researchers say.

In an oral presentation at the annual meeting of the American Academy of Neurology in Philadelphia, scientists say patients with hippocampal sparing AD are substantially different from the most commonly known form of AD, which affects the hippocampus, the center of memory.

The patients, mostly male, are afflicted at a much younger age, and their symptoms can be bizarre — behavioral problems ... are controlled by an “alien” unidentifiable force, or visual disturbances in the absence of eye problems, researchers say. They also decline at a much faster rate than do patients with the most common form of AD.

"Many of these patients, however, have memory that are near normal, so it's more difficult to recognize the symptoms and make the diagnosis," says the study's lead author, Melissa Murray, Ph.D., an assistant professor of neuroscience at Mayo Clinic in Florida. "Many of these patients are diagnosed with frontotemporal dementia, a disorder characterized by changes in personality and social behavior, or Alzheimer's disease, characterized by memory loss and cognitive decline. Language problems in the form of difficulty reading, writing, or speaking is also common in hippocampal sparing AD, although patients do not have vocal or hearing deficits.

"What is tragic is that these patients are commonly misdiagnosed and we have new evidence that suggests drugs now on the market may work better in these hippocampal sparing patients — possibly better than they work in the common form of the disease," Dr. Murray says.

The researchers benefit greatly from one of the largest brain banks in the country — more than 6,500 brain donations — as well as a collaborative environment between neuroscience research and neurology at Mayo Clinic, she says.

Both hallmark proteins of AD — amyloid beta (Aβ) and tau — are present in hippocampal sparing AD brains, the study also found. However, concentrations of these proteins are substantially different from the most commonly known form of AD.
In these patients, the amyloid plaques are formed on the surface and eventually become deposits in certain areas of the brain. These deposits are believed to contribute to the cognitive decline seen in AD patients. However, the exact role of amyloid plaques in the disease is still not fully understood.

In these patients, tau preferentially damages and eventually destroys neurons in parts of the brain involved in behavior, motor awareness and recognition, as well as the use of speech and vision, Dr. Murray says.

She says she hopes this research, the second high-profile Mayo study to highlight hippocampal sparing AD, will "open the door" for clinicians who are trying to diagnose dementia, helping them understand that loss of memory is not present in every AD patient.

"Our studies support the notion that dementia related to AD does not necessarily equate to a loss of memory, and points to the need for additional imaging biomarkers to help clinicians accurately diagnose AD—regardless of subtype," Dr. Murray says.

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