Could Loneliness Be an Early Sign of Alzheimer's Disease?

Contributor: Nancy J. Donovan, MD
Nancy J. Donovan, MD, is a psychiatrist in the Department of Psychiatry and Neurology at Brigham and Women's Hospital (BWH).

In people with Alzheimer's, the disease process—involving abnormal protein accumulation in the brain—begins 10 or 20 years before the onset of cognitive impairment.

In 2016, researchers at Brigham and Women's Hospital (BWH) published a study that examined whether certain emotional or behavioral changes were associated with the accumulation of abnormal proteins, such as amyloid—a protein believed to be a precursor of Alzheimer's.

“We thought loneliness could be an early signal of amyloid accumulation, because in epidemiologic studies lonely people have accelerated cognitive decline,” says study leader Dr. Nancy Donovan, a psychiatrist in the Department of Psychiatry and Neurology at BWH.

Dr. Donovan and her colleagues analyzed data from 79 men and women with an average age of 76, who were participating in the Harvard Aging Brain Study. The participants answered questions designed to assess how lonely they felt, and the researchers used imaging scans to detect the presence of amyloid.

After factoring in gender, age, depression, genetics, socioeconomic status, anxiety and the social networks of the participants, results showed that those with preclinical Alzheimer disease were 7.5 times more likely to feel lonely when compared to people who did not show early signs of the disease.

“It may be that during the process of amyloid accumulation, as older people are beginning to experience cognitive decline, they are less able to successfully socialize, become less comfortable and have more anxiety in social situations,” says Dr. Donovan.

Dr. Donovan noted that it is possible that loneliness in older adults might also signal subtle changes in social cognition, or how someone processes, stores, and applies information about other people and social situations. A person’s sense of feeling connected to other people is related to brain function and that could be altered in people who have an abnormal accumulation of amyloid, she says.

Loneliness may be one of a number of emotional and behavioral symptoms related to preclinical Alzheimer’s disease. The association could also work in reverse: loneliness could promote the accumulation of amyloid, or perhaps the two could be occurring simultaneously in a cycle, says Dr. Donovan.

“We are just starting to make the connection between neuropsychiatric symptoms and their underlying biological substrate. This is the first time that loneliness has been shown to occur as a result of alteration in brain structure or function,” says Dr. Donovan.

Dr. Donovan notes that not all patients who are lonely will develop Alzheimer's disease, but loneliness or social isolation could be a relevant characteristic to monitor in older individuals.

“These emotional and behavioral changes could be indicative of brain changes related to Alzheimer's disease and may be part of a checklist of early signs and symptoms of Alzheimer's that clinicians could use in the future,” says Dr. Donovan.