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ALZHEIMER'S PREVENTION THROUGH DELAY

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PREVENTION HIGHLIGHT

Treatment of the Mild Cognitive Impairment Stage of Alzheimer's Disease

Some decline in one's ability to remember things is part of normal aging. However, at times memory loss is due to an underlying medical condition and is classified as either mild cognitive impairment (MCI) or dementia. MCI and dementia are two stages along the continuum of cognitive impairment severity. Persons with MCI have impairments limited to one category of cognitive function (e.g. memory, judgment, reasoning, executive function), but this impairment does not interfere with their activities of daily living. Persons with dementia have impairment in two or more cognitive functions and such impairment interferes with their ability to function as usual in social, family, personal or professional life.



MCI is the first clinical stage of Alzheimer's Disease. The subtype of MCI associated with Alzheimer's Disease is called amnesic MCI and affects an individual's memory. Approximately 80% of people with amnesic MCI develop Alzheimer's Disease within 6 years. According to the Mayo Clinic, 15–20% of MCI patients convert to Alzheimer's Disease each year. In comparison, the conversion rate for the general population is 1–2%. Since MCI is the first symptomatic stage of Alzheimer's Disease, accurately detecting memory loss at the MCI stage enables medical professionals to diagnose early stage Alzheimer's Disease.



Disease delaying treatments exist for the stages of Alzheimer's Disease associated with dementia but not MCI. At the same time, multiple studies have clearly demonstrated disease delaying effect of the asymptomatic stage of Alzheimer's Disease (which precedes the MCI stage) as well as for the dementia stages of Alzheimer's Disease. These treatments operate by lowering the level of a protein called beta amyloid 1–42 in the brain. Validation of a disease delaying effect has not yet been published for the MCI stage of Alzheimer's Disease which is between these two stages. However, the underlying physiopathology of Alzheimer's Disease from its asymptomatic stage to its dementia stage does not change so there is little reason to think that lowering beta amyloid 1–42 brain levels during the MCI stage will not also delay its progression. MCI trials conducted, to date, were designed to evaluate all causes of impairment, not just Alzheimer's Disease. As such, they were not designed to measure a treatment effect in MCI due to Alzheimer's Disease. Furthermore, these MCI trials had serious methodological flaws that would have made it difficult to detect a beneficial treatment effect among subjects with Alzheimer's Disease. In spite of these flaws, analyses of possible Alzheimer's Disease patients suggested that the drug Exelon reduced the rate of cognitive decline by 24%, albeit at a high cost of side effects. The availability of the Exelon patch late this year will largely resolve the side effect issue while permitting the ability to delay Alzheimer's Disease progression during both Mild Cognitive Impairment and dementia stages.

RESEARCH UPDATES

Silent Strokes Impair Quality of Life

A study using data from Reasons for Geographic and Racial Differences in Stroke (REGARDS) cohort evaluated the relationship between silent strokes and an individual's quality of life using the Physical and Mental Component Summary scores of the Short Form 12 (PCS–12 and MCS–12). George Howard, DrPH, from the School of Public Health at the University of Alabama, Birmingham, and colleagues compared the average physical and mental functioning among participant groups symptom-free (n=16,090); history of stroke symptoms but free of stroke/transient ischemic attack (n=3,404); history of stroke (n=1,491); and history of transient ischemic attack (n=818). Compared to subjects without symptoms or a diagnosis of stroke, those with silent strokes had PCS–12 scores that were 5.5 points lower. In comparison, the group that had already had a TIA scored 6 points lower than the group without symptoms.

Disciplined & Driven Individuals May Have Lower Risk of Alzheimer's

Results of analysis of the Religious Orders Study, which included 997 older Catholic priests, nuns and brothers suggests disciplined and driven individuals may have a lower risk of developing Alzheimer's disease. At the beginning of study the participants had an average age of 75 and none showed signs of dementia. All participants took personality tests and were followed for 12 years and were tested annually for cognitive decline and dementia. Brain autopsies were performed on most of the participants who died. During the 12 years, 176 developed Alzheimer's disease. Those with the highest scores for a personality trait called "conscientiousness" had an 89% lower risk of developing Alzheimer's disease. The study was published in the September issue of Archives of General Psychiatry.

Smoking May Increase Risk for Dementia and Alzheimer's Disease

According to a recent study, individuals aged 55 years or older who were current smokers were 50% more likely to develop dementia than those who had never smoked or were past smokers. Monique M. Breteler, MD, PhD, of Erasmus Medical Center in Rotterdam, the Netherlands and colleagues analyzed data from the Rotterdam Study. The study included 6,868 subjects aged 55 years or older who did not have dementia.

Information about the subjects' current and past health, medication, lifestyle, and risk factors for chronic disease was gathered and all subjects were asked about past and current smoking habits. At baseline and at follow-up, the subject's cognition was assessed and those suspected of having dementia underwent examination by a neurologist and a neuropsychologist and, if possible, also underwent a magnetic resonance imaging brain scan. During a 7-year follow-up, 706 subjects (10.3%) were diagnosed with dementia. Of these 555 (78.6%) had Alzheimer's disease and 79 (11.2%) had vascular disease.

After adjusting for other factors, current smoking was associated with a higher risk for dementia and Alzheimer's disease when compared with those who had never smoked. However, there was no association between vascular dementia and smoking status or past smoking and a risk for dementia, Alzheimer's disease or vascular disease.

Caregiving for Alzheimer's Patients May Curtail Caregiver's Life

Researchers at the National Institute on Aging in Baltimore and colleagues studied the effect of providing care for patients with Alzheimer's disease on the health of caregivers. The study included 41 individuals caring for an Alzheimer's patient for an average of 5 years, and 41 individuals who were not caring for ill persons. Research found that caregivers had twice the number of symptoms for depression in comparison to non-caregivers. Caregivers also had lower levels of T-cells and higher level of proteins, which caused inflammation. Caregivers also had shortened telomeres, the genetic material at the end of chromosomes that promotes error-free cell division. Telomeres shorten gradually over time, and such shortening in Alzheimer's caregivers equaled to four to eight years of aging. Changes in genetic material were seen in immune cells known as peripheral blood mononuclear cells (PBMCs).

Mediterranean Diet May Reduce Mortality Risk in Alzheimer's Patients

Mediterranean diet includes high intake of vegetables, legumes, fruits, and cereals; high intake of unsaturated fatty acids (such as olive oil); low intake of saturated fatty acids; moderately high intake of fish; a low to moderate intake of dairy products; low intake of meat or poultry; regular but moderate amount of alcohol, usually wine taken with meals. A recent study followed 192 subjects who had been diagnosed with Alzheimer's disease and evaluated each person's adherence to Mediterranean diet. Scored on a scale of 0-9, 9 indicating the highest level of adherence to the diet. After 4.4 years of follow-up, 44% of patients had passed away. Analysis of the data revealed that adherence to the Mediterranean diet was the main predictor of mortality. Mortality risk fell with each additional point indicating a higher level of adherence to the Mediterranean diet. Among all the subjects, those in the highest tertile of adherence had the lowest risk and 3.91 year longer survival rate when compared to those in the lowest tertile.

Higher Education Lowers Dementia Risk

1,388 individuals middle-aged or older were followed for an average of 21 years as part of the Results of Cardiovascular Risk Factors, Aging, and Dementia (CAIDE) study. Throughout the study, researchers gathered information such as socioeconomic factors, health behavior, health status, and medical history of the subjects. The subjects also had their blood pressure measured and underwent ApoE genotyping and had their cognition assessed. The subjects were categorized into three groups based on education: low for those with 5 years or less of education, medium for those with 6 to 8 years of education and high for those with 9 or more years of education. During the course of the study, 61 individuals were diagnosed with dementia and 48 with Alzheimer's disease. Those with a high level of education had an 80% lower level of risk for developing dementia when compared to those with a low level of education. Those with medium level of education had a 40% lower level of risk when compared to those with low level of education.

Adjusting for any other factor did not change the level of risk, thus education level independently lowered the risk for dementia. Tiia Ngandu, MD, PhD of the Karolinska Institute in Stockholm, Sweden, led the study.

Higher Plasma Folate Concentrations Associated With Better Cognitive Performance

Researchers at Erasmus Medical Center, Rotterdam, the Netherlands, and colleagues studied the link between higher plasma folate concentrations and cognitive performance. They analyzed data from the Rotterdam Scan Study on 1033 non-demented subjects aged between 60 and 90 years old. The subjects had plasma folate levels ranging from 0.9 nmol/L to 55 nmol/L. The authors report that after adjusting for potential confounders, the mean change in test score per 1-SD increase in plasma folate was 0.05 for global cognitive function, 0.08 for psychomotor speed, and for memory function. Adjustment for homocysteine concentration only slightly diminished these associations. The odds ratio relating a 1-SD increase in plasma folate to the presence compared with the absence of severe white matter lesions was 0.79, whereas no relation was seen between folate status and hippocampal or amygdalar volume.

2005–2006 Progress Report on Alzheimer's Disease: Journey to Discovery

The National Institute on Aging (NIA), part of the Federal Government's National Institutes of Health (NIH), has primary responsibility for basic research in Alzheimer's disease (AD) as well as research aimed at finding ways to prevent and treat AD. The organization recently published the 2005–2006 Progress Report on Alzheimer's Disease which summarizes recent research on Alzheimer's Disease conducted or supported by NIA and other components of NIH.

Download the complete report by visiting the National Institute of Health Website at:
[http://www.nia.nih.gov/NR/rdonlyres/8726ED71-2A21-4054-8FCB-9184BACB3833/0/20062007 Progress Report on Alzheimers Disease.pdf](http://www.nia.nih.gov/NR/rdonlyres/8726ED71-2A21-4054-8FCB-9184BACB3833/0/20062007%20Progress%20Report%20on%20Alzheimer's%20Disease.pdf)

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