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Genes Related to Alzheimer's disease

B.A. AGLAVE, PRABHA RAI KALAL AND M.O. LOKHANDE

See end of the article for authors' affiliation

B.A. AGLAVE
Department of Biotechnology, Institute of Life Sciences, H.P.T. Arts and R.Y.K. Science College,NASHIK (M.S.) INDIA

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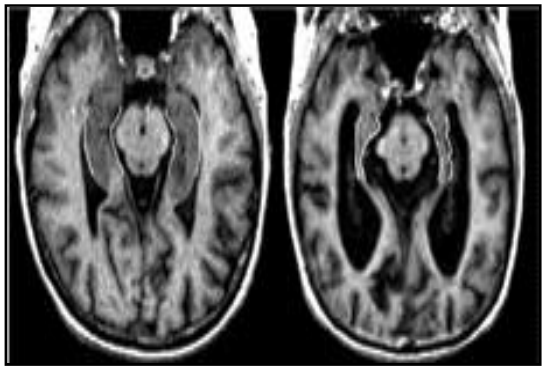
Alzheimer's disease is a progressive, degenerative disease of the brain, which causes thinking and memory to become seriously impaired. The likelihood of having Alzheimer's disease increases substantially after the age of 70 and may affect around 50% of persons over the age of 85. Alzheimer's disease is not a normal part of aging and is not something that inevitably happens in later life. For example, many people live to over 100 years of age and never develop Alzheimer's disease.

As the disorder progresses, some people with Alzheimer disease experience personality and behavioral changes and have trouble interacting in a socially appropriate manner. Other common symptoms include agitation, restlessness, withdrawal and loss of language skills. People with this disease usually require total care during the advanced stages of the disease. Affected individuals usually survive 8 to 10 years after the appearance of symptoms, but the course of the disease can range from 1 to 25 years. Death usually results from pneumonia, malnutrition or general body wasting.

Alzheimer disease can be classified as early-onset or late-onset. The signs and symptoms of the early-onset form appear before age 65, while the late-onset form appears after age 65. The early-onset form is much less common than the late-onset form, accounting for less than 5 per cent of all cases of Alzheimer disease. It is the most common form of dementia. Dementia is a syndrome consisting of a number of symptoms that include loss of memory, judgment and reasoning, and changes in mood, behaviour and communication abilities

The disease was first identified by Dr. Alois Alzheimer in 1906. He described two hallmarks of the disease: "plaques" - numerous tiny dense deposits scattered throughout the brain which become toxic to brain cells at excessive levels. "Tangles" which interfere with vital processes eventually "choking" off the living cells. As brain cells degenerate and die, the brain shrinks in some regions markedly.



Genes related to Alzheimer disease:

Early-onset:

In this type, Alzheimer disease is caused by gene mutations that can be passed from parent to child. Researchers have identified mutations in three genes that cause this form of the disorder: APP, PSEN1, and PSEN2. As a result of mutations in any of these genes, large amounts of a toxic protein fragment called amyloid beta peptide are produced in the brain. This peptide can build up in the brain to form clumps called amyloid plaques, which are characteristic of Alzheimer disease. A buildup of toxic amyloid beta peptide and amyloid plaques may lead to the death of nerve cells and the progressive signs and symptoms of this disorder. These peptides are 'cut' out from a larger protein called the amyloidal precursor protein (APP) and bind together to form plaques.

Late-onset:

The cause of this type of Alzheimer disease are less clear. The late-onset form does not clearly run in families, although clusters of cases have been reported in some families. This disorder is probably related to variations in one or more genes in combination with lifestyle and environmental factors. A gene called APOE has been studied extensively as