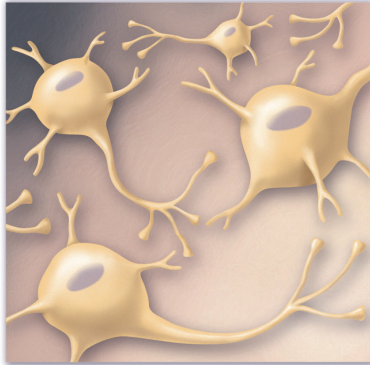
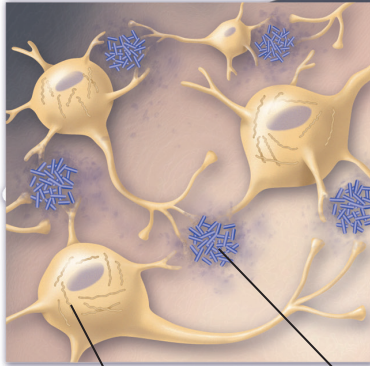


Alzheimer's Disease

Normal brain tissue



Alzheimer's brain tissue



Tangles (twisted tau proteins)

Neuritic plaque (beta-amyloid protein clumps)

TEAR ALONG PERFORATION

MEDICAL ILLUSTRATION: © KRISTEN WEINANDT MARZEJON 2009

Progressive, Irreversible Form of Dementia

Alzheimer's disease (AD) is the most common type of dementia, a brain disorder that interferes with daily living. In AD, brain tissue is progressively destroyed, leading to loss of memory, thinking, learning, and reasoning skills. In the early stage, memory begins to fade and everyday tasks become challenging. Patients may forget appointments or where they left their keys. As brain-cell destruction continues, recalling a word, person, or place becomes difficult, and patients often repeat an activity or conversation. In the late stages of AD, the brain-cell destruction is so severe that activities of daily living are impossible, orientation to time and place are lost, and patients become completely dependent on caregivers. Ultimately, AD is fatal.

In AD, there are two primary changes in the brain that cause its cells to die. Plaques (small clumps of protein) form in brain tissue and block brain cells from sending messages to each other. Tangles (accumulation of twisted protein filaments) cause further brain-cell deterioration. Scientists do not fully understand why these changes occur, but they have identified genes that increase the risk of AD. Other factors that increase risk include older age, high blood pressure, high cholesterol, and diabetes. Women are more often affected than men, perhaps owing to their longer life span.

Although there is no cure or vaccine for AD, several medications exist that can slow the progression of symptoms and relieve associated problems, such as anxiety and insomnia. Eating a healthful diet and exercising both body and mind may help delay the development of AD.

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The Most Common Type of Dementia

Alzheimer's disease (AD) involves brain shrinkage and symptoms including loss of memory, difficulty speaking, and bizarre behavior. It is estimated that up to 5 million Americans suffer from AD.

Brain Changes and Resulting Symptoms

Although some loss of brain cells is a normal part of aging, this change results in only a mild slowing of memory and thinking ability. Normal aging brains develop a small number of plaques and tangles (abnormal accumulations of protein that cause brain-cell death).

The deterioration of brain function seen in AD is not a normal aging process. AD is a serious, progressive disorder that results in significant loss of memory and thinking ability, ultimately leading to a complete loss of brain function. Patients with AD develop an excessive number of plaques and tangles, far beyond what occurs in normal aging.

Younger-onset AD can occur in a person's 30s, but it is more commonly diagnosed in its mild stage after age 60. The incidence of AD increases dramatically with age.

The brain changes that occur with AD begin many years before symptoms appear. At first, mild memory loss is seen, similar to the normal memory changes of aging. Over time, memory loss progresses to confusion and the inability to concentrate and reason. Patients may lose items; forget how to perform simple tasks, such as cooking; or become confused as to the day, year, or time. Eventually, decisions become difficult and judgment is irrational. Common personality changes include unexpected anger, irritation, distrust, and moodiness. Speech may become difficult, and the ability to read and write is lost. Depression and social isolation are common.

The symptoms of AD worsen over time and are permanent. Ultimately, people with advanced AD are unable to care for themselves. Their bodily functions begin to fail since they are bedridden, and they often develop health complications such as infection or pneumonia.

Diagnosis and Treatment

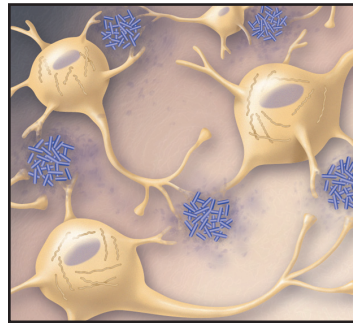
Diagnosis is based on psychological and neurologic tests that determine memory and thinking ability. Laboratory tests help eliminate other causes of dementia symptoms. MRI, CT, and positron-emission tomography are performed to detect physical changes in the brain.

Treatment cannot stop the continuing death of brain cells, but there are medications that can help improve symptoms and associated conditions, such as agitation, anxiety, depression, and sleep problems. Drugs that can slow the loss of thinking ability and memory include cholinesterase inhibitors (CEIs) (Aricept, Exelon, and Razadyne) and Namenda, a drug that protects brain cells from chemical damage. CEIs work by increasing neurotransmitters, brain chemicals that transmit messages. Namenda can be used together with a CEI for an additive effect. Unfortunately, these medicines do not work for every patient with AD, and even in those whose symptoms improve, the effect may not last long. These drugs have side effects that may limit their use in some patients.

Reducing the Risk of AD

Steps can be taken to lessen the chance of developing AD. A diet rich in whole grains, fish, poultry, beans, and fruits and vegetables is recommended. Daily physical activity and mental exercise may keep brain tissue healthy. Regular physicals and treatment of chronic diseases such as hypertension, diabetes, and high cholesterol may help reduce the risk of AD.

Many resources for coping with this disease, including local and national support groups, are available for patients with AD and their families and caretakers.



The abnormal protein deposits found in the brains of people with AD may be involved in the loss of cognitive function that characterizes the disorder.