

## **About Alzheimer's Disease**

Alzheimer's disease (AD) is the most common cause of dementia in older people. A dementia is a medical condition that disrupts the way the brain works. AD affects the parts of the brain that control thought, memory, and language. Every day, scientists learn more about AD, but right now the cause of the disease still is unknown, and there is no cure. An estimated 4 million people in the United States suffer from AD.

The disease usually begins after age 65, and risk of AD goes up with age. While younger people also may have AD, it is much less common. About 3 percent of men and women ages 65 to 74 have AD, and nearly half of those age 85 and older may have the disease. It is important to note, however, that AD is not a normal part of aging.

AD is named after Dr. Alois Alzheimer, a German doctor. In 1906, Dr. Alzheimer noticed changes in the brain tissue of a woman who had died of an unusual mental illness. He found abnormal clumps (now called senile or neuritic plaques) and tangled bundles of fibers (now called neurofibrillary tangles). Today, these plaques and tangles in the brain are considered hallmarks of AD.

Scientists also have found other changes in the brains of people with AD. There is a loss of nerve cells in areas of the brain that are vital to memory and other mental abilities. There also are lower levels of chemicals in the brain that carry complex messages back and forth between billions of nerve cells. AD may disrupt normal thinking and memory by blocking these messages between nerve cells.

## **Diagnosis**

A detailed history of the symptoms and how they evolved is crucial to arriving at a correct diagnosis. There are a number of different late-life illnesses that may cause dementia.

Often, one of the best clues to an individual's illness is the pattern of the earliest changes observed by the family. It is very important for a knowledgeable family member to accompany the patient in order to provide this critical information.

It is also important to obtain information about current medications, any other medical problems that may be present and whether there is a family history of a similar problem with memory and thinking. A physical and neurological exam are necessary to look for conditions that might produce a dementia. (a condition of diminished mental processing) or worsen the expression of Alzheimer's disease.

In addition, a "mental status" assessment may be helpful to determine the memory, language and other cognitive abilities of the patient.

## **Laboratory Studies**

Other than identifying the presence of one of the rare gene mutations known to cause Alzheimer's disease, there are no laboratory tests that can be used to diagnose this disorder with certainty.

However, as we learn more, Alzheimer's disease is moving from a diagnosis of exclusion; (a diagnosis made in the presence of an appropriate clinical picture and in the absence of an alternative explanation) to a "diagnosis of inclusion" (a diagnosis made in the presence of both an appropriate clinical picture and specific disease related abnormalities on selected laboratory tests). Your physician may determine which tests are appropriate based on the findings of the history and physical examination.

## **Spinal Fluid**

The spinal fluid of many patients with Alzheimer's disease contains altered levels of two proteins; tau and A-beta, both suggest the presence of Alzheimer's disease. However, not all patients have these changes and patients with other neurologic problems that may mimic Alzheimer's disease can also have alterations in these two proteins. Therefore, using the existence of these two altered proteins to diagnose Alzheimer's disease may be limited to those centers that have experience in interpreting the results.

## **Brain Imaging**

Computed Tomography (CT scans) and Magnetic Resonance Imaging (MRI scans) provide pictures of brain structure and one or the other may be used in the evaluation of a patient with symptoms of dementia. These tests can identify conditions such as strokes, subdural hematomas and tumors that alter brain anatomy. However, the changes in brain anatomy produced by Alzheimer's disease are often difficult to distinguish from normal age-related changes.

Consequently, research centers are beginning to modify the testing done in research.

Single Positron Computed Tomography (SPECT) scans provide information about blood flow in the brain and are used as an indirect measure of brain cell health. The clinician looks for patterns of decreased blood flow that match the areas of the brain known most often to be affected by Alzheimer's disease. Because this is an indirect measure of brain function and because other dementing illnesses can alter blood flow to the brain, this test is often not diagnostic

Positron Emission Tomography (PET) scans provide a direct indication of the health of brain cells. PET scans are not widely available and many clinicians

regard them as a research tool when used in the evaluation of patients with dementia.

## **Prevention**

There is no certain way to prevent Alzheimer's disease. However, it may be possible to reduce the risk of developing the illness or to delay the onset of the dementia symptoms. Because Alzheimer's disease occurs late in life and there is such a long duration between the onset of symptoms and death, the ability to delay the time when the first problems become evident would be particularly useful. For example, if the average age of symptom onset could be delayed by just five years (from age 75 to age 80), many people would not become severely impaired until age 90. Often other medical problems will intervene and cause death before the point where nursing home admission becomes necessary. If the onset could be delayed by ten years, most people would be more likely to die of other causes before their Alzheimer's disease reached the point where they routinely required the assistance of others. A delay of 20 years would essentially mean that Alzheimer's disease would be a significant health problem only for those individuals who lived beyond age 100.

As with other body parts, the brain is subject to wear and tear. Thus, as people age, it is prudent to do everything reasonable to protect their brain cells from premature failure. This will allow them to function at their best despite the development of a late-life neurodegenerative illness such as Alzheimer's disease. Thus, while there is no certain formula for preserving brain function throughout the entire life span, there are some things that may be helpful. People should maintain lifestyles that are as physically, mentally and socially active as possible. They should exercise both their brains and bodies on a regular basis. They should maintain a healthy, nutritious diet. People should take vitamin E daily, consulting their doctor for the appropriate dose, avoid excessive alcohol, and review all medications they take (both prescription and non-prescription) with their physician on a regular basis.

## **Symptoms**

Memory loss is usually the first symptom of Alzheimer's disease. Most commonly it takes the form of a failure to remember new information or recent events. For example, persons may repeat themselves, forgetting that they already said the same thing earlier. Or, they may fail to remember information or instructions they were given a short time before. As the illness progresses they begin to misplace objects or fail to remember where they are usually located. They often do not realize that this is happening and/ deny the existence of a memory problem. People with Alzheimer's disease may develop paranoia, accusing others of stealing misplaced items. Initially, family members often dismiss the changes as age related or as the beginning of senility. Often it is only after the problem progresses to the point where it can no longer be ignored that medical attention for their loved one is sought. Rarely will the patient initiate the evaluation.

The following is a modified list from the Alzheimer's Association of some warning signs:

1. **Recent memory loss that affects job skills** -- It is normal to occasionally forget assignments, colleagues' names, or a business associate's telephone number and then remember them later. Those with a dementia, such as Alzheimer's disease, forget things with greater frequency and often fail to remember them even when reminded.
2. **Difficulty performing familiar tasks** -- Busy people can be so distracted from time to time that they may leave the carrots on the stove and only remember to serve them at the end of the meal. People with Alzheimer's disease may have difficulty going through the proper steps to prepare the carrots.
3. **Problems with language** -- Everyone has trouble finding the right words sometimes, but people with Alzheimer's disease may forget simple words or substitute inappropriate words, making their sentences difficult to understand.
4. **Disorientation to time and place** -- It is normal to occasionally forget the day of the week or how to get where you are going. However, people with Alzheimer's disease may become lost in familiar surroundings, not knowing where they are, how they got there, or how to get back home.
5. **Poor or decreased judgment** -- People can become so immersed in an activity that they temporarily forget about something else that they are supposed to be doing at the same time, such as watching a child. People with Alzheimer's disease may entirely forget about the child under their care. They may also dress inappropriately for the weather or put on several shirts or blouses.
6. **Problems with abstract thinking** -- Balancing a checkbook may be disconcerting when the task is more complicated than usual. Someone with Alzheimer's disease may completely forget what the numbers are and what needs to be done with them.
7. **Misplacing things** -- Anyone can temporarily misplace a wallet or keys. A person with Alzheimer's disease may put things in inappropriate places: the ice cream in a kitchen cabinet or the milk in the freezer.
8. **Changes in mood and behavior** -- Everyone becomes sad or moody from time to time. Someone with Alzheimer's disease can exhibit rapid mood swings - from calm to tears to anger, for no apparent reason.

9. **Changes in personality** -- People's personalities may change slightly with age; however, a person with Alzheimer's disease can change drastically, becoming extremely confused, suspicious, or fearful.
10. **Loss of initiative** -- It is normal to tire of housework, business activities, or social obligations, but most people regain their initiative. People with Alzheimer's disease may become very passive and require cues and prompting to become involved.

As the disease progresses, patients become increasingly confused and disorientated. They may have difficulty expressing what they want to say. The progressive brain failure alters their personality and behavior. They may have periods of agitation, depression, or paranoia. They lose the ability to exercise good judgment and use common sense. All the while, they may deny that they have any problems and refuse to believe they need help.

### **Getting The Care You Need**

Finding a knowledgeable, compassionate health care provider team is the single most important task faced by a caregiver. The needs of both the caregiver and patient are multifaceted and require the skills of several types of healthcare providers. These include a physician (neurologist, geriatrician, or geriatric psychiatrist), social worker, and healthcare educator. The best place to start is with your personal physician.

The Alzheimer's Association has local chapters throughout the United States. They have a help-line for caregivers seeking information. They also sponsor caregiver support groups and frequently provide education seminars for caregivers of newly diagnosed patients. A list of the chapters and their phone numbers can be obtained from the National Alzheimer's Association office in Chicago by calling (800) 272-3900.

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