

Department of Clinical Neuropsychology

Understanding Dementia due to Alzheimer's Disease



Dementia is a term that describes difficulty with daily functioning caused by a decline in thinking abilities. There are many different causes of dementia. Dementia due to Alzheimer's disease (AD) is the most common form of dementia. AD accounts for 60% to 80% of dementia cases.

Symptoms

Symptoms of AD appear gradually and progress slowly over months to years. AD typically starts with difficulty forming new memories. For example, a person may forget conversations, repeat stories and questions, and have problems remembering recent events. Memories of events farther in the past are usually preserved until later in the disease.

As AD progresses, other thinking skills are affected. Language difficulties are common, including trouble thinking of words, expressing thoughts, and understanding what others say. Problems with visual-spatial skills may also occur. These problems include difficulty judging distances, trouble navigating, and getting lost in familiar locations. Problems with judgment, decision-making, and reasoning are also possible.

In addition to thinking problems, people with AD may also experience changes in their behavior and mood. Possible symptoms include agitation (verbal or physical aggression, restlessness), delusions (beliefs that are not real), and hallucinations (seeing or hearing things that are not there). People with AD may also become more socially withdrawn. Medications are often helpful for managing changes in mood and behavior.

Causes

Plaques and Tangles

AD is caused by plaques and tangles in the brain. Plaques are created by a buildup of protein in the space around brain cells. Tangles are caused by deposits of a different protein inside brain cells. As these proteins build up, they lead to the death of brain cells. This process can lead to changes in thinking and behavior, and ultimately, to dementia.

AD usually starts in a part of the brain called the hippocampus. The hippocampus is important for the formation of new memories, so memory difficulties are

typically the first sign of AD. Over time, AD spreads to other parts of the brain and affects other thinking skills, behavior, and emotions.

AD and Genetics

Most cases of AD occur after age 65 and are not hereditary. These cases are referred to as "late-onset" or "sporadic" cases. Some genes are considered risk factors, which means that having the gene increases a person's likelihood of developing AD. The most common genetic risk factor is a gene known as apolipoprotein e4, or *APOE-e4*. However, it is important to understand that having a genetic risk factor does not mean a person will develop AD. Likewise, many people who have AD do not have the *APOE-e4* gene.

Early-onset AD occurs between 30 and 60 years of age and is very rare. These cases can be random or due to certain genes passed down through families. Only about 13% of early-onset AD is passed on from a parent to a child, who will eventually develop AD.

Risk Factors

- Older age
- High cholesterol
- High blood pressure
- Diabetes mellitus
- Moderate to severe traumatic brain injury
- Lower education
- *APOE-e4* gene

Common Diagnostic Tests

A diagnosis of AD usually begins with an appointment to see a neurologist. The neurologist will ask for detailed information about current symptoms, prior functioning, and other health conditions. The neurologist will probably order tests, including an MRI, neuropsychological testing, and sometimes, a PET scan. The neurologist may also order lab work to rule out potentially reversible causes of dementia, such as poor nutrition.

An MRI can show changes to brain structures, like shrinkage, that may help with a diagnosis. PET scans are a special type of brain imaging that can help diagnose AD. For example, amyloid PET scans allow doctors to see

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if there is a buildup of the protein that makes up plaques in the brain. FDG-PET scans measure how much glucose (the brain's main energy source) different parts of the brain are using. If certain parts of the brain are using less glucose, this can indicate that these areas are not functioning properly.

Neuropsychological testing relies on paper and pencil tests to look at the specific ways in which thinking is impaired. The doctor looks at the test results for patterns of performance across different areas of thinking, like memory and language. These patterns identify which brain functions and which parts of the brain are affected. These changes are often not visible on MRI or other forms of brain imaging.

Treatment

Right now, there is no cure for AD. If appropriate, a neurologist may prescribe medications that help slow the rate of cognitive decline. These medications do not stop or cure the disease, but they can slow disease progression. Medications may also help manage symptoms of agitation, mood changes, and delusions or hallucinations. Finally, doctors often give medications to control a person's vascular risk factors. For example, doctors may prescribe medication to lower blood pressure and reduce cholesterol.

Suggestions for Patients

- Eat a heart-healthy diet low in saturated fat, like the Mediterranean diet. This diet will help keep the vascular system healthy and reduce the likelihood of vascular disease in the brain.
- Get regular physical exercise, particularly aerobic exercise.
- Engage in mental activities that keep your brain challenged.
- Stay involved in social activities with family and friends.
- Use a pill organizer and alarms to help you remember to take medications.
- Use a calendar or planner to keep track of upcoming appointments, events, and tasks that need to be completed. Use only one planner or calendar to avoid confusion.
- Ask your health care providers to give important information in writing.
- Talk with trusted family members or friends about your wishes for the future, so that they may advocate for you if needed.
- Set up a medical, financial, and mental health power of attorney. Give a trusted individual the legal authority to assist you with important tasks.

Suggestions for Caregivers

- Find fun ways to remain active with your loved one.
- Stick to a routine.
- Use external aids, such as calendars, lists, and whiteboards, to keep track of important events and tasks.
- Assist your loved one with tasks that have become particularly challenging or frustrating but allow them the independence to continue activities that they can complete.
- Avoid pointing out lapses in memory. Try to be patient with the need for repetition.
- When possible, attend important appointments and meetings to aid with recall.
- Have important conversations in a quiet room free of distractions.
- When discussing important information, simplify your language. Use short, direct sentences to aid comprehension.
- Talk with your loved one about their wishes for the future. Work with other family members to establish a realistic plan for your loved one's future care needs.
- Work with a social worker or attorney who focuses on elder law to establish important legal documents, such as a power of attorney and a living will.
- Ensure you are still caring for yourself. Allow yourself time to refresh and recharge; if you have limited support from others, there are agencies available that provide respite services, often free of charge.

Examples include:

- Visiting Angels
www.visitingangels.com | (800) 365-4189
- Duet
duetaz.org/homebound-adults-2 | (602) 274-5022

Resources

Additional resources for patients and caregivers, such as educational materials, support groups, and more, can be found below.

Arizona Alzheimer's Association
www.alz.org/dsw

Area Agency on Aging
www.aaaphx.org

Family Caregiver Alliance
www.caregiver.org

Daily Caring
www.dailycaring.com

Managing Dementia with Dignity
www.barrowneuro.org/wp-content/uploads/Taking-Care-Managing-Dementia-with-Dignity-2020.pdf