

## Alzheimer's disease explained

Alzheimer's disease is a progressive and eventually fatal disease of the brain. It impairs higher brain functions such as memory, thinking and personality. The two forms of the disease are sporadic Alzheimer's disease, which can strike adults of either sex, and familial Alzheimer's disease, which is caused by a rare genetic mutation.

The cause of sporadic Alzheimer's disease is unknown, but researchers are investigating a range of possible contributing factors such as high cholesterol and inflammation. Alzheimer's disease is the most common form of dementia. It affects one in 25 Australians aged 60 years and over. There is no cure and no way yet proven to prevent the disease from developing.

### Early stage symptoms of Alzheimer's

Since Alzheimer's disease is a progressive disease, the initial symptoms may be too subtle to notice. The symptoms differ from one person to the next, depending on factors including the affected brain areas, but some of the common early stage symptoms can include:

- Memory lapses
- Problems with thinking of the right word for common objects
- Difficulties with making decisions
- Confusion
- Personality changes, such as irritability.

### Late stage symptoms of Alzheimer's

The symptoms become more severe as time goes by and can include:

- Long term memory loss, including forgetting the names of family members
- Inability to manage responsibilities, such as work or running the house
- Inability to look after oneself; for example, help may be needed to go to the toilet
- Severe personality changes
- Loss of social skills, such as the ability to hold a conversation
- Speech loss
- In the later stages, the person is usually bed-ridden and needs full-time care.

### Two types of Alzheimer's

The two types of Alzheimer's disease are:

- **Sporadic Alzheimer's disease** - this type accounts for more than 90 per cent of cases. Adult men and women of all ages can be affected, although most cases occur in people over the age of 65 years. It can take up to 20 years for the disease to develop.
- **Familial Alzheimer's disease** - this rare type is caused by a genetic mutation. The age of onset is earlier than for sporadic Alzheimer's disease, with symptoms appearing when the person is aged in their 40s or 50s.

### Protein build-up causes the brain to 'rust'

Brain cells (neurons) 'talk' to each other by means of connections called synapses. In Alzheimer's disease, these connections are broken and ultimately disappear entirely in the parts of the brain where thinking occurs.

Post mortems of the brains of people who have died from Alzheimer's disease reveal remnants of damaged cells called 'tangles' as well as 'amyloid plaques' in the spaces between the cells. These plaques are mostly made up of aggregates of a protein called 'A-beta'. It is the build-up of this otherwise normal protein that is thought to cause the damage in this disease.

Research has shown that, sometimes, the A-beta can convert oxygen into hydrogen peroxide - a form of bleach - which then corrodes the grey matter, particularly the parts of the brain concerned with memory and reasoning. Researchers are trying to work out why this build-up occurs in some people and not others. They are also trying to find ways to reduce or abolish the toxic effects of the protein.

## Risk factors for Alzheimer's

Some of the risk factors include:

- **Advancing age** - the incidence of Alzheimer's disease increases with age. Some estimates suggest that about one quarter of people aged 85 years and over have Alzheimer's disease.
- **Down syndrome** - a person with Down syndrome has an increased risk because they have an extra chromosome. This means they have an additional copy of the gene for the amyloid precursor protein, the 'mother' molecule from which A-beta is made. This makes it more likely that this protein will accumulate in their brains.
- **Family history** - each child of a parent who carries the familial Alzheimer's gene has a 50 per cent chance of inheriting the disease.
- **Environmental factors** - researchers are investigating possible environmental causes, such as head injuries and other stresses. The results so far are inconclusive.
- **Unknown** - for most people who develop Alzheimer's disease, no known risk factors can be found.

## Diagnosis of Alzheimer's

Diagnosis is difficult, because there is no definite test for the disease. Only a post mortem can establish beyond doubt whether Alzheimer's disease was present. Diagnosis is about 90 per cent accurate. It is important to rule out the presence of other conditions that can mimic the symptoms of Alzheimer's disease, such as brain tumours, depression or some types of malnutrition. The range of diagnostic tests used may include:

- Medical history
- Physical examination
- Blood and urine tests (called a 'dementia screen')
- Urine tests
- X-rays
- Imaging techniques, such as a CT scan
- Neurological examination
- Neuropsychological tests
- Intellectual function tests
- Psychiatric assessment.

## Treatment for Alzheimer's

There is no cure for Alzheimer's disease. The only available treatment is the use of drugs that boost the efficiency of damaged neurones. Drugs can also ease some of the secondary symptoms of Alzheimer's disease, such as depression. Second generation drugs, which are aimed at inhibiting the production or toxic effects of the A-beta protein, are in development but will not be generally available for some years. Professional associations, support groups and counselling can help the affected person and their family come to terms with the diagnosis, and plan for the future.

## Where to get help

- Your doctor
- Alzheimer's Australia Vic Tel. (03) 9815 7800
- National Dementia Helpline Tel. 1800 100 500
- The Mental Health Research Institute of Victoria Tel. (03) 9388 1633

## Things to remember

- Alzheimer's disease is a progressive and eventually fatal disease of the brain.
- Alzheimer's disease is the most common form of dementia, affecting one in 25 Australians aged 60 years and over.
- Diagnosis is difficult, because there is no definite test for the disease. Only a post mortem can establish beyond doubt whether Alzheimer's disease was present.

**This page has been produced in consultation with, and approved by:**

Mental Health Research Institute

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