Drug Treatment of Alzheimer's disease

Introduction

This public information leaflet provides information about drugs used to treat Alzheimer's disease. It discusses how the drugs work, why they are prescribed, their side effects and alternative treatments. Alzheimer's disease is only one of many possible causes for memory problems in people. The other causes are described in detail in our Help is at Hand leaflet, 'Memory and Dementia'.

Cholinesterase Inhibitors

What are Cholinesterase inhibitors? These are the main drugs used for Alzheimer's disease in the United Kingdom. Three drugs are currently licensed:

<table>
<thead>
<tr>
<th>Drug name</th>
<th>Other name</th>
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<tr>
<td>Donepezil</td>
<td>Aricept®</td>
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<tr>
<td>Galantamine</td>
<td>Reminyl®</td>
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<tr>
<td>Rivastigmine</td>
<td>Exelon®</td>
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There are no major differences between these drugs. They are all designed to alleviate certain symptoms of Alzheimer's disease - for example, memory loss, apathy and anxiety. They are not a cure, though there is some evidence that they may slow the course of the illness.

What effect can these drugs have?

They can improve memory, particularly remembering new information and recall of old information. They can also have general benefits including improving alertness and motivation. It may take some months of treatment for there to be a noticeable improvement or slowing down of memory loss. Some people report improved mood and will be able to perform tasks which they had forgotten how to do such as going shopping.

What side effects are there?

The most common side effects of these drugs are nausea, loss of appetite, tiredness, diarrhoea, muscle cramps and sometimes poor sleep. These may be reduced or avoided by increasing the dose slowly, or taking the medicine after food. The side effects usually fade after a few weeks and will go away if the medicine is stopped. More information about side effects can be obtained from the doctor prescribing the treatment or by reading the leaflet that comes with the prescription.

How do they work?
Acetylcholine is a chemical that is involved in the transmission of information between certain brain cells involved in memory. In Alzheimer's disease, these brain cells start to die and the amount of acetylcholine available to pass messages between cells is very much reduced. Memory starts to suffer. Cholinesterase Inhibitors reduce the destruction of acetylcholine and increases its levels in the brain. The increase in the amount and effectiveness of acetylcholine reduces some of the effects of Alzheimer's disease.

**How well do they work?**

Research has shown that about 50-60% of people who have taken these drugs show a slight improvement or a stabilisation of their condition over a period of six months. However, in the longer term, it is not known whether the effect of these drugs will be temporary or whether they will slow the rate of decline over a longer period of time. Unfortunately not everyone benefits from these medicines, and if no improvement or stabilisation is seen in the first few months, it is recommended that they are stopped. In Britain the National Institute for Clinical Excellence (NICE) has decided that these drugs are not cost effective in the early stages of Alzheimer's Dementia and should only be given to people in moderate stages of the illness. Many people are unhappy about this decision.

**How should these drugs be taken?**

It is usual to start on a low dose which is gradually increased. Don't be put off by any side effects early on in the treatment as these usually wear off after a few weeks. It is important to take the drugs every day for them to be effective.

**How long should these drugs be taken?**

These drugs are usually prescribed for a trial period of three to four months. If the doctor decides they are not working, he or she will recommend stopping them. If these drugs do work, there is currently no clear consensus as to how long they should continue to be prescribed. People with Alzheimer's disease are often given a memory test called the 'Mini Mental State Examination' (MMSE). Current guidelines suggest that these drugs should only be used when the MMSE score is between 10 and 20 out of 30. However, some doctors believe that these drugs work in earlier and later stages of the illness.

**Who can prescribe these drugs?**

A specialist, rather than your GP, will prescribe the medicine during the trial period. You will usually see the specialist in a hospital clinic. You may need blood tests and a brain scan to exclude any other causes for the memory loss. In some areas the specialist will continue to prescribe the drug if they conclude that it is working. In other areas the specialist may continue assessing its effectiveness but ask that the family doctor prescribes it.

**Memantine**
This drug, which is also known as Ebixa, has been used to treat dementia in Germany since 1989. It is thought to work by affecting glutamate, a brain chemical which is involved in learning and memory. In Alzheimer's disease too much glutamate leaks out of damaged brain cells and this interferes with learning and memory. In the studies completed so far just over half the people taking Memantine show some slowing down in the progression of the dementia but this effect has only been demonstrated so far in people with more severe dementia. The main side effects of Memantine, which are usually mild, are nausea, restlessness, stomach-ache and headache.

More studies are being undertaken to see how effective it is and how the drug can best be used. NICE has issued guidance that Memantine should not be routinely prescribed in Britain due to doubts about its cost effectiveness.

**Other Treatments**

**Ginkgo biloba**

This is a naturally occurring substance extracted from the Maidenhair tree. It has long been thought to enhance memory. Some studies have shown it is nearly as effective as the cholinesterase inhibitors. It is thought to work as an 'anti-oxidant' in that it clears the body of toxins (known as free radicals) which are released by damaged cells. Ginkgo may also 'activate' the brain by improving circulation. It has few side effects, but it can delay blood clotting and should not be used by people suffering from bleeding disorders or those already on anticoagulants like aspirin or warfarin.

It is generally felt that more research should be undertaken to clarify the effectiveness of gingko, before it can be recommended as a treatment. It is mainly useful in combination with other treatments. People wishing to take gingko should first discuss its use with their doctor. You can get it without a prescription from health shops and chemists. However, you should ensure that the product you buy contains a standardised extract of the leaf rather than leaf powder which does not have a guaranteed level of the active ingredients.

**Vitamin E**

This is a natural substance found in oils from soya beans, sunflower seeds, corn and cotton seed, as well as whole-grain foods, fish-liver oils and nuts. Vitamin E has various functions in the body and acts as a natural anti-oxidant. Vitamin E deficiencies are very rare.

Some studies suggest that taking Vitamin E can slow the progression of Alzheimer's disease. It is a recommended second line treatment in the United States. However, further research needs to be done to establish its place in the treatment of Alzheimer's disease. It can interfere with blood clotting and should be used with caution in people with a clotting disorder and on oral anticoagulants, although it can be used with aspirin.
In 2004 a review of studies involving a total of over 136,000 patients suggested that people taking over 400 units a day may be at a small increased risk of harm. Some experts are therefore suggesting that not more than 200 units a day should be taken.

There is some evidence that a diet rich in natural Vitamin E may reduce the risk of developing Alzheimer's disease.

**Selegeline**

This is a drug that is normally used in Parkinson's disease. It is also thought to work as an anti-oxidant but has more possible side effects than the use of Vitamin E, including lowering of blood pressure, nausea, dizziness or vivid dreams. Some studies suggest it may slow the progression of Alzheimer's but further research is needed.

**Other therapies**

Other drugs and therapies are being investigated for Alzheimer's disease. Developments in this field are rapid and encouraging. It is important to be wary of claims for any new drugs or therapies you read about in the media. Advice should always be sought from your family doctor, specialist or a national organisation such the Alzheimer's Society.

Dementia can be a great burden for carers and loved ones. Their health and well-being is also vital. Further information about ways in which they can help and be supported can be found in our Memory and Dementia leaflet.

**References :**

1. Memory & Dementia  
   A Royal College of Psychiatrists leaflet.
2. Donepezil, Rivastigmine and Galantamine for the Treatment of Alzheimer's Disease  
   National Institute for Clinical Excellence (Dec 2001)
3. Independent review of studies on Ginkgo Biloba  
   Cochrane Review, Aug 2002
4. Vitamin E for Alzheimer's disease  
   Cochrane Review, August 2000

**Further reading**

- Dementia - Alzheimer’s & other dementias  
- Drugs for the treatment of Alzheimer's disease (Alzheimer's Society)
- What is Alzheimer's disease? (Alzheimer's Society)
- Information about other developments in drug treatment of Alzheimer's disease