

**INTERNATIONAL JOURNAL OF UNIVERSAL
PHARMACY AND BIO SCIENCES****IMPACT FACTOR 4.018*******ICV 6.16*******Pharmaceutical Sciences****Review****Article.....!!!****ALZHEIMER'S DISEASE AND RECENT, DEVELOPMENTS IN ITS
TREATMENT****K. V. Sai Santhoshi Lakshmi^{*}, M. Vasavi chandrika¹**

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KEYWORDS:

Alzheimer's disease, Shark antibodies, Passive immunotherapy, BACE Inhibitors.

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ABSTRACT

The main aim of this paper is to explain about Alzheimer's disease. It is the most common form of dementia .In this case the neuronal activity of a person gets decreased and affects the memory, thinking, and reasoning and even may cause behavioral changes in a person and may be one of the reasons for premature senility. It is diagnosed by Detailed review about patient's medical history, CT, PET or MRI scans. There is no specific treatment for Alzheimer's disease yet now but recent developments occurring such as Passive immunotherapy, BACE Inhibitors,Using shark antibodies.which are considered as mile stone in the treatment of Alzheimer's disease. The special features that made to choose the shark antibodies are their small size, robustness & high immunity against diseases. The drugs commonly used like donepezil,rivastigmine can only decrease the progression of Alzheimer's disease but cannot completely cure. In olden days, although Alzheimer's disease may be a life threatening disease but the recent developments creates a hope that Alzheimer's disease can be completely cured.

INTRODUCTION:**Alzheimer's Disease^[1]:**

It is the most common form of dementia {memory loss}. In this case the neuronal activity of a person gets decreased and effects the memory ,thinking ,reasoning and even may cause behavioral changes in a person and may be one of the reason for premature senility.

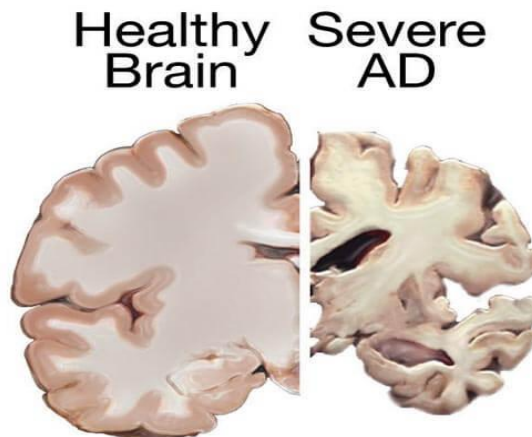
It may occur in 3 stages: Mild, Moderate and Severe

Mild stage: It is the first stage. In this stage the motor skills of the person does not get affected but finds difficulty in recognizing familiar things.

Moderate stage: It is the second stage and the long lasting stage which may occur for years. In this stage the person's ability in motor skills gets affected and gets more frustrated.

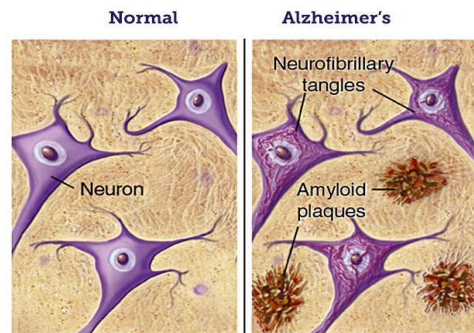
Severe stage: It is the last stage. In this stage the person fails to respond to the environment that they live and the cognitive and memory skills gets even more worsened and the person needs intensive care.

The changes in the structure of the brain in a person suffering with Alzheimer's disease is as follows.



The changes in the neurons of a person suffering with Alzheimer's disease are the formation of neurofibrillary tangles and amyloid plaques which may interrupt in the transmission of action

Normal vs. Alzheimer's Diseased Brain



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potential or impulses

Neurofibrillary tangles: Occurs due to the hyperphosphorylation of tau protein {proteins that stabilize microtubules}.

Amyloid plaques: These occurs due to the acumulation of amyloid {protein fragments} as hard insoluble plaques.

The signs and symptoms of dementia are:

- 1) They may not be able to remember the recent things but can remember the thing from the past as their neuronal activity is good in the past before the attack of Alzheimer's disease.
- 2) The patients may not follow the conversations in T.V.
- 3) Problems may occur with the reasoning and thinking ability of the person.
- 4) Being anxious, depressed or hesitated is one of the sign indicating AD.
- 5) The patient may get confused even in the familiar environment.
- 6) Forgetting the names of friends or everyday objects, even the person is familiar with them.

Risk factors: Alzheimer's disease may occur due to the following risk factors

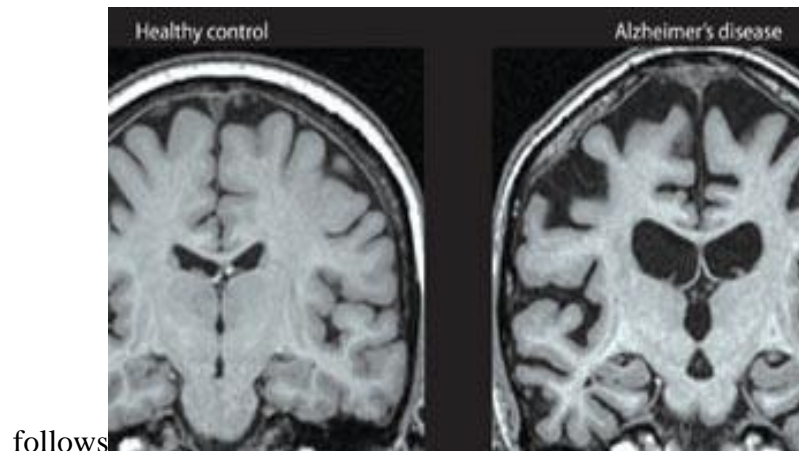
- Increased age
- Genetics
- Smoking and alcohol habits
- Down syndrome
- Coronary artery diseases
- Hypertension

Diagnosis for Alzheimer's disease include:

- Detailed review about patient's medical history

- CT, PET or MRI scans

The MRI scan images of normal brain and brain with Alzheimer's disease are as



follows

Treatment:

The most commonly drugs used to treat the symptoms of AD are given below but they may not be able to completely cure AD

- Donipetil{Aricept}
- Galantamine{Razadine}
- Memantine{Namenda}
- Rivastigmine{Exelon}

The drus in development include

- Aducanumab
- Solanezumab
- Nasal insulin

There is no specific treatment for Alzheimer's disease yet now but recent developments occurring are as follows:

1) Passive immunotherapy: In this methos the solution of antibodies which can remove or prevent the formation of amyloid plaques are injected intravenously to the patient.

2) BACE Inhibitors: Here, beta amyloid cleaving enzymes{BACE Inhibitors} like Verbecestat, LY3202626 and others that can cross blood brain barrier are used to inhibit the activity of BACE.

3) Shark antibodies^[2]: The antibodies of shark can cross the BBB of human brain and can be henced used for the treatment of AD. These antibodies are said to have the capacity to regenerate the synapses of brain and may halp to make the cholinergic neurons to conduct the

impulses.



The main reasons to use the shark antibodies are as follows:

- Sharks are the first known species which developed antibodies.
- Unlike most of the other antibodies, shark antibodies have a low molecular weight of just 12-13Kda whereas the other antibodies have a molecular mass of about 150Kda.
- The main reasons are the small size, robustness and stability makes them penetrate much more deeply into the tissues than any other antibodies.
- Shark antibodies are simple in structure and have a single immunoglobulin variable domain.
- Shark antibodies are said to have huge disease resistant potential.
- Dutch Biotech company “Cross beta Biosciences” has been granted an exclusive license to three beta-amyloid oligomer-specified shark antibodies, identified under a collaboration with the Australia company “Ad Alta”.
- Even though, Alzheimer’s disease may be a life threatening disease in olden days, with the development of these new researches, there is a hope that Alzheimer’s disease can be completely curable.

Interesting facts about Alzheimer’s disease:

- Alzheimer’s disease kills more people than prostate and breast cancer combined.
- When a woman is pregnant the foetus can prevent the occurrence of Alzheimer’s disease.
- In the U.S alone, there are 5 million people suffering with Alzheimer’s disease.

- For every 68 second a person is said to be diagnosed with Alzheimer's disease.

CONCLUSION:

Alzheimer's disease is the most common form of dementia. It is diagnosed by detailed review about patient's medical history, CT, PET or MRI scans. There is no specific treatment for Alzheimer's disease yet now but recent developments are occurring such as Passive immunotherapy, BACE Inhibitors, using shark antibodies. The main reasons to choose shark antibodies are the small size, robustness and stability makes them penetrate much more deeply into the tissues than any other antibodies. Shark antibodies are simple in structure and have a single immunoglobulin variable domain. Even though, Alzheimer's disease may be a life threatening disease in olden days, with the development of these new researches, there is a hope that Alzheimer's disease can be completely curable

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