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Review Article

BRAIN DISORDER- (ALZHEIMER'S DISEASE)**Pansare Jagruti J***, Malode Deepali¹, Chavan Shreya², Pawale Sagar³, Gade Krushna⁴,

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Article Received: June 2022**Accepted:** June 2022**Published:** July 2022**Abstract:**

ALZHEIMER'S DISEASE AD is one of the most common neurodegenerative diseases and is considered to be the main cause of cognitive impairment in elderly people. The major symptoms of AD is progressive dementia that eventually results in dysfunction of daily life.

A person with Alzheimer's lives four to eight years after diagnosis, but can live as long as 20 years. The exact cause of Alzheimer's disease is still unknown, there's no certain way to prevent the condition, but by diet, music therapy and some few drugs can reduce the risk of Alzheimer's disease.

Keywords: Alzheimer's disease, Brain disorder, Beta-Amyloid Protein,

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INTRODUCTION:

ALZHEIMER'S DISEASE AD is progressive neurodegenerative disease of the brain and the common cause of dementia in older people, accounting for 60%-80% of cases of late-life cognitive dysfunction. Common symptoms include a gradual loss of memory, difficulty in learning, language difficulties misplacing things, etc. People with dementia also experience changes in their personalities and behavior problem. It has recently been shown that Alzheimer's is the leading cause of dementia, in fact 70% of dementia are due to Alzheimer. There is degeneration of brain neurons especially in the cerebral cortex and presence of neurofibrillary TANGLE composed of tau PROTEIN and PLAQUE composed of Beta-Amyloid

PROTEIN. There are no disease modifying drugs available for Alzheimer's disease but some options may reduce it's symptoms and help improve quality of life and thereby help the patient some extend. There are four drugs in a class Cholinesterase inhibitors approved for symptomatic relief in the United States, i.e Donepezil, Alantamine, Rivastigmine and Tacrine. AD knows no social, economic ethnic or geographical boundaries eventually those affected are unable to care for themselves and need help with all respect of daily life. The magnitude of this disease is huge that it is estimated 18 million people affected worldwide with Alzheimer

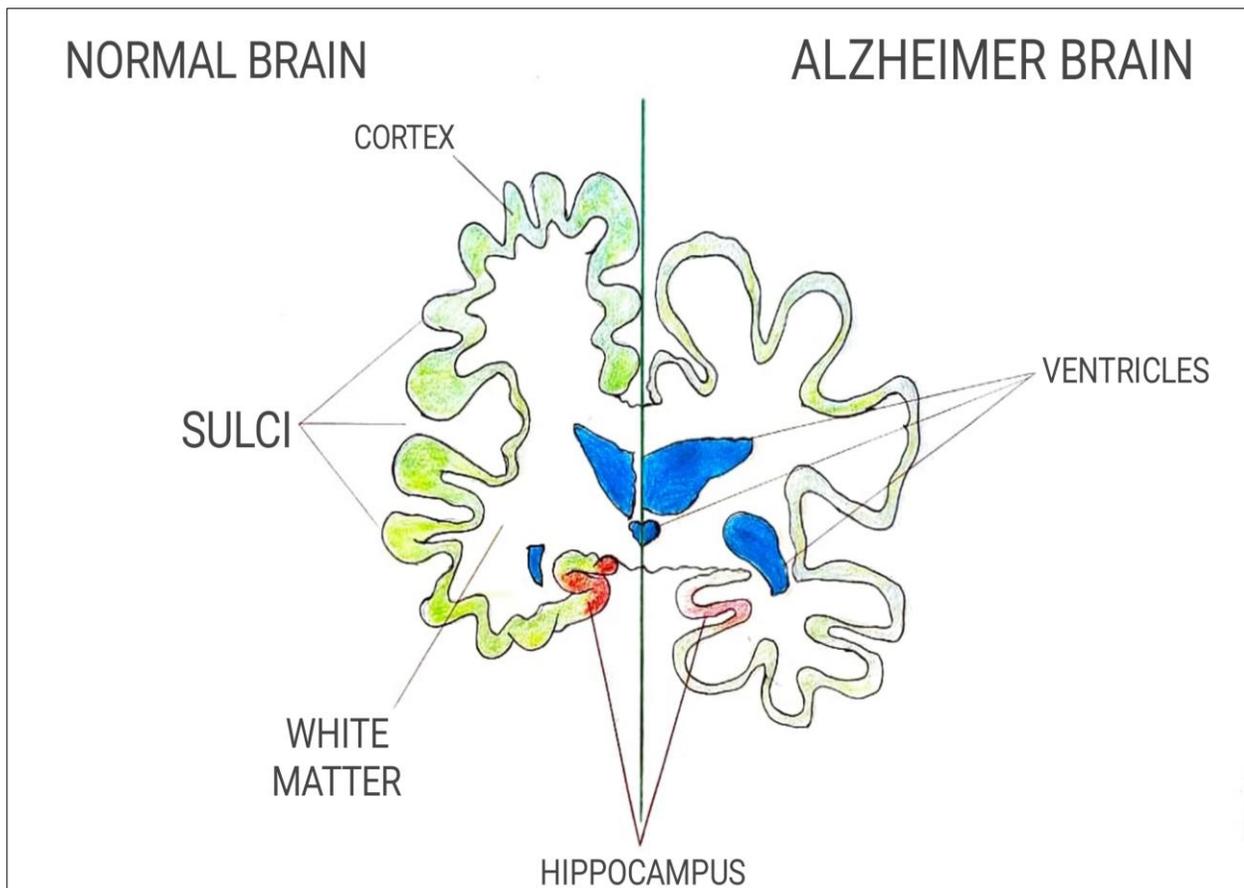


Fig 1: Difference between Normal and Alzheimer brain

CAUSES OF DISEASE

Alzheimer's disease accounts for 60% to 70% of cases of dementia. It is a chronic neurodegenerative disease that usually start slowly and gets worse over time. One theory is that plaques avert never cells inside the brain from communicating appropriately. Tangles may make it complicated for the cells to get the nutrients they require. It is understandable that as Alzheimer's develops certain nerve cell die rising numbers of nerves cell, also known as neurons are lost as disease evolves.

1. AGE:

Increasing age is the greatest known risk factor for Alzheimer Disease. Alzheimer's is not a part of normal aging, but as you know older the likelihood of developing Alzheimer Disease increases. Older age does not caused Alzheimer's but it is the most important risk factor for this disease. Physical changes occur in old age like, bones tend to shrink in size & destroy muscles generally lose strength, stability & balance.

2. DOWN SYNDROME:

Many people with Down Syndrome develops Alzheimer's disease. This is likely related to having three copies of chromosomes 21 and subsequently three copies of the gene for the protein that leads to the creation of beta-amyloid. Signs and symptoms of Alzheimer's tend to appear 10-20 years earlier in the people with Down Syndrome then they do for the general population.

3. GENETICS:

Genetic factor plays a major role in determining a person's risk to develop Alzheimer's disease (AD). The genetic heritability of Alzheimer's disease, based on reviews of twin and family studies, range from 49% to 79%. Around 0.170 of the cases are familiar forms of autosomal (not sex-linked) dominant

inheritance, which have an one-set before age 65. This form of the disease is known as early one-set familial Alzheimer's disease. Though its rare but small percentage of people developed AD before age 65 year. Three genes which are linked with causing AD due to mutation in them are-Amyloid precursor protein (APP), Presenilin 1(PSEN1) and Presenilin 2 (PSEN2). [1]

(i) Late-onset Alzheimer's gene :

Four gene affecting Alzheimer's disease (AD) (AP,PS1,PS2 and APOE) have been identified and a fifth potential gene localized to chromosomes 12. This genes explain at most half of genetics effect In AD. Understanding the genetics of AD is critical to developing new treatments. The quest to find the remaining AD genes led us to undertake the large genomic screen using over 466 families (730 affected sibpairs) in late-onset AD. In conjunction with this increase in power, we initiated several novel approaches to identify potential AD. [2]

(ii) Early-onset Alzheimer's:

This type happens to people who are younger than age 65. Often, they're in their 40s or 50s when they're diagnosed with disease. It's rare upto 5% of all people with Alzheimer's have early-onset. People with Down syndrome have a higher risk for it. Scientists have found a few ways in which early-onset Alzheimer's is different from other types of disease. People who have it tend to have more of brain changes that are linked with Alzheimer's. The early-onset form also appears to be linked with a defect in a specific part of a person's DNA:chromosome 14.A form of muscle twitching and spasm, called myoclonus, is also more commonly in early-onset Alzheimer's.

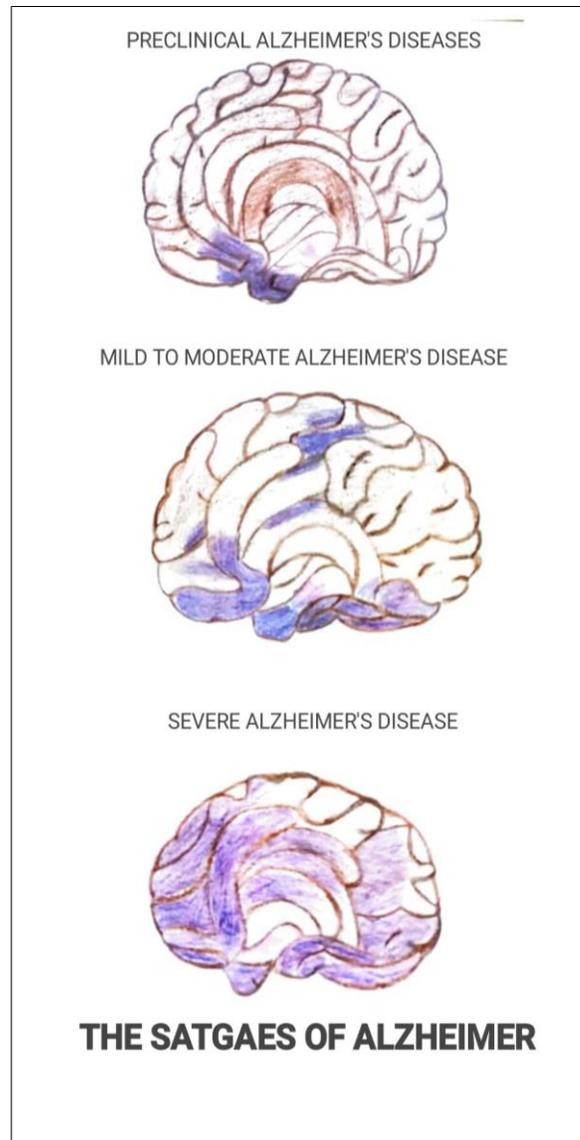


Fig 2: stages of Alzheimer

4. Changes in personality and behavior:

Brain changes that occurs in Alzheimer disease can affect moods and behaviors. Problem may include the following

- Depression
- Apathy
- Social withdrawal
- Mood swings
- Changes in sleeping habits

5. DEPRESSION:

Depression has long been linked with Alzheimer's in fact depression is the first sign of this memory impairing disease. In many cases, they become

depressed when they realized that their memory & ability to function are getting worse Depression is the risk factor for dementia. e.g. Physical pain & social isolation.

6. LIFESTYLE IN HEART HEALTH:

Research has shown that the same risk factors associated with heart disease may also increase the risk of Alzheimer's disease. These include:

- Lack of exercise
- Obesity
- High blood pressure
- High cholesterol
- Poorly controlled type 2 diabetes.

SEX:

Lifestyle factors such as smoking, excessive alcohol use, and poor diet modulate susceptibility to dementia in both males and female. The degree to which the resulting health conditions (eg, obesity, type 2 diabetes and cardiovascular disease) impact dementia risk varies bisex. Depending on the sub type of dementia, the ratio of male to female prevalence differs. For example females are at greater risk of developing Alzheimer disease dementia, whereas males are at greater risk of developing vascular dementia^[3]. This review examines sex and gender differences in development of dementia with the goal of highlighting factor that require further investigation. Considering sex as biological variable in dementia research promises to advance our understanding pathophysiology and treatment of these conditions.

MEDICATION:

No care exists, but medication and management strategies may temporarily improve symptoms. Yalantamine, Rivastigmine, and Donepezil are cholinesterase inhibitors that are prescribed for mild to moderate Alzheimer symptoms. These drugs may help reduce or control some cognitive and behavioral symptoms. Medication may be justified for people with diagnosed dAD who are suicidal, violent, hot eating or drinking or who score high on the Cornell scale .

The evidence would seem to suggest similar efficacy or SSRIS and tricyclic antidepressants in initial treatment for dAD. If these treatments do not address the symptoms, it would be reasonable to try noradrenergic drugs, secondary amine tricyclic antidepressants or a monoamine oxidase inhibitor. ^[4] Sertraline, as per the latest studies has been found to be infective in improving cognitive outcomes in patient with Alzheimer disease. ^[5] Sertraline is also associated with increased incidence of gastrointestinal and respirator adverse effects.

MUSIC THERAPY FOR AD:

Listening to or singing songs can provide emotional and behavioral benefits for people with Alzheimer's disease and other types of dementia. Musical memories are often preserved in Alzheimer's disease

because key brain area linked to musical memory are relatively undamaged by the disease^[6].

e.g. , music can:

- Relieve stress
- Reduce anxiety and depression
- Reduce agitation
- Improve patient's focus
- Improve their ability to communicate
- May lower their dependence on psychiatric drugs ^{[7][8]}

Music can also benefits caregivers by reducing anxiety and distress, lightning the mood and providing a way to connect with loved ones who have Alzheimer disease especially those who have Alzheimer's disease, follow this tips.

- a. Think about your loved one's preferences
 - b. Set the mood
 - c. Avoid overstimulation
 - d. Encourage movement
 - e. Sing alone
 - f. Pay attention to your loved one's response
- The form of music therapy are broad in nature and can range from individual or group singing sessions, to active participation in music making, to listening to songs individually.
 - Population living with Alzheimer music Therapy is sometimes used to assist in palliating the behavioral and psychological symptoms of this disease.^{[9][10]}
 - Music therapy is based in scientific finding and can elicit change in individuals as well as groups through music.
 - The MUSIC AND MEMORY program has been recognized as the most widely used music treatment strategy and its efficacy has been studied by psychologist and noted positively in several formal studies, including a 2018 study by the University of Utah Health in Salt Lake City.
^{[11][12]}

DIET FOR PEOPLE WITH ALZHEIMER'S DISEASE:

A quick Nutritional Reference to foods that Nourish and protect the Brain from Alzheimer's disease. Eat variety of foods, especially fruits and vegetables, whole grain, lean protein and low fat dairy^{[13][14]}.

Keep a healthy weight and do exercise daily^[15]. The Mind diet specially limits red meat, butter and margarine, cheese, sweets, fried or fast food. So, diet is important part for Alzheimer's Disease patients^{[16][17]}. It can reduced risk of Alzheimer's Disease and a slower rate of cognitive decline^{[18][19]}.

CONCLUSION:

Alzheimer's disease is brain disorder that slowly destroys memory and thinking skills and, eventually the ability to carry out the simplest tasks. Person with Alzheimer's disease live, on average 4-8 years after diagnosis. Some patients can live long as 20 years after diagnosis. There is no current therapies prevent development of symptoms but, by diet, music therapy and some few drugs can reduced the risk of Alzheimer's disease.

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