

A Review On Alzheimer's Disease And Managements

Rajneesh Kumar Pandey*, Venu Anand Das Vaishnav, Rajni Yadav

Faculty of Pharmacy, Kalinga University, Near Mantralaya, Village Kotni, Naya Raipur, Chhattisgarh, India, 492101

Email: rajni.yadav@kalingauniversity.ac.in

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Abstract

The progressive degeneration of any organ or any cell is a major issue. That is now seen world wide at an alarming rate. This disorder is related to the brain and the whole nervous system is now a days going at an equal rate with cardiac issues the most widely shown disorder which is displayed in the records of the hospitals are the neurodegenerative disorders Alzheimer's disease and there is a progressive degeneration of the nerve cells of the central nervous system which leads to many complications. These neurodegenerative disorders can be treated in earlier stages which involve different medications and therapies for better results. The paper below mainly focuses and targets on the different types of behavior activities that are related to the central nervous system by which medication designed for the treatment of these types of disorders is used for in vitro and in vivo studies in the field of pharmacology and preclinical studies

Keywords: Alzheimer's disease, cognitive impairment, treatment & management, clinical & preclinical evidence

Introduction

The most typical cause of cognitive impairment in senior people is Alzheimer's disease, a gradual degenerative brain illness. According to estimates, 5.8 million people mostly 65 and older suffer from Alzheimer's disease in United State. Mostly issue of dementia is Loss of memory. Remember, thinking, judgment, and language loss that significantly affects a person's day-to-day activities is known as dementia. A set of symptoms that frequently accompany a sickness or condition, rather than a disease within itself. The prospect of using a smelling test to identify the onset of Alzheimer's illness was considered in a recent study that was published in the American Psychiatry Review (1).

Alzheimer's disease and other brain disorders, infections, abnormalities in the pulmonary and circulatory systems that reduce the amount of oxygen reaching the brain, nutritional deficiencies, vitamin B12 deficits, tumors, and other conditions can all contribute to the progressive loss of cognitive strengths. (4,)

When Alois Alzheimer When Alois Alzheimer examined the brain of his first patient, who experienced memory loss and a change in personality before passing away, he found the presence of amyloid plaques and a significant loss of neurons. He described the condition as a serious disease of the cerebral cortex. In his psychiatry handbook's eighth edition, Emil Kraepelin for the first time referred to this illness as Alzheimer's disease. (2,3)

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Stages of Alzheimer's disease:-

- The progression of Alzheimer's can be broken into three basic stages.
- Mild cognitive impairment
- Onset of Dementia

Memory issue: -

Elderly people who complain about their memory may actually have issues with their focus, word finding, or executive function (see below). Episodic memory, or recalling past experiences in the context of time and place, is predominantly

affected by memory impairment. Antero grade amnesia refers to a severe loss of memory for recent occurrences. Retrograde amnesia is the term used to describe forgetfulness for events that occurred before the onset of impairment. Semantic memory, which consists of knowledge of concepts and facts, operates more or less independently from episodic memory and is closely related to language functions. (11)

This review's objectives are to provide a brief overview of the diagnosis, pathology, causes, and current therapies for Alzheimer's disease (AD) and to draw attention to recently developed drugs that may be able to prevent or treat Alzheimer's disease by focusing on a number of pathogenic mechanisms, including AB and tau aggregation and misfolding, inflammation, oxidative damage, and others.

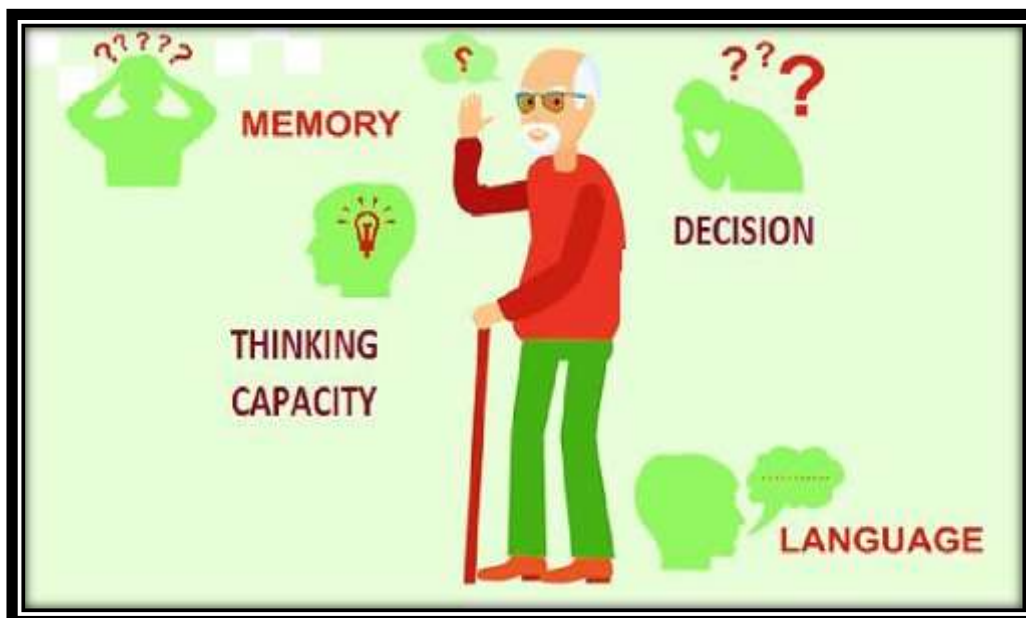


Fig.1Memory Issues

Cognitive Impairment:-

The evaluation of Alzheimer's disease is centered on cognitive function, which is sensitive to change and evaluates other are as in addition to memory. The scale goes from zero (no impairment) to seventy (severe impairment). The ADAS-Cog scale, which is scored similarly to the

Original Blessed Scale, generally shows an increase in scores of 6 to 12 points per year in individuals with mild-to-moderate Alzheimer's disease. (5) There have been attempts to characterize impairments that may reflect the preclinical stage of dementia because cognitive loss begins long before the disease can be identified. Patients with moderate cognitive impairment are those, whose impairment is objectively discernible, but not pronounced in more than one domain of cognition, And does not significantly interfere with daily living activities. There are several definitions of mild cognitive impairment. The criteria for "amnestic" mild cognitive impairment developed by Petersen et al. are the most commonly utilized ones (1999). These are intended to find isolated memory impairment that could be a sign of Alzheimer's disease. Although criteria for moderate cognitive impairment offer a practical clinical method for locating individuals at risk of dementia, there are many drawbacks. First off, even tight standards still permit a fair amount of flexibility in the type and quantity of tests employed as assessment tools. In light of this, investigations on the frequency of mild cognitive impairment and the rate at which it progresses to dementia are difficult to compare and provide wildly disparate findings. Additionally, different kinds of dementia may not always exhibit the same early signs(14).

Treatment & Management

Around 24 million people are said to have Alzheimer's disease worldwide as of right now, and by 2050, experts predict that number will have quadrupled. Even though AD is a public health concern, only two kinds of medications are currently approved to treat AD: N-methyl-d-aspartate antagonists and choline esterase enzyme inhibitors (naturally occurring, synthetic, and hybrid versions) (NMDA). The destruction of Ach-producing cells by a number of physiological mechanisms in AD lowers cholinergic transmission in the brain. ACh levels in the synaptic cleft are raised as a result of cholinesterase enzymes (AChE and BChE) being prevented from degrading ACh by acetyl cholinesterase inhibitors (AChEIs), which are

divided into reversible, irreversible, and pseudo-reversible types. (6)

The clinical diagnosis of Alzheimer's disease is characterized as following a sequence: the first stage involves the patient's history and the most crucial details regarding their prior illnesses from an informant. The assessment of mental state is part of stage two and a follow-up test of cognitive function. The third crucial point of physical examination, which should concentrate on Investigations are used in addition to vascular and neurological symptoms. Dementia assessment involves two steps. First of all, it is crucial Distinction between dementia syndromes and other conditions. These conditions are moderate delirium, depression, and mania. Cognitive dysfunction Second, after dementia has been identified after the diagnosis of the dementia subtype is complete because it aids in selecting a disease's potential treatment.(7)

Natural cognitive enhancers:-Tulsi, turmeric, almonds, walnuts

- **Dopaminergic:-**These drugs have an impact on the dopamine-using parts of the nervous system or the dopamine neurotransmitter itself. Dopamine effects include an increase in antioxidant activity, alertness, and focus.

Ex. Dopamine agonist- Dopamine agonists: Ropinirole, Pramipexole.

- **Memory enhancers:-** Cholinergics: They have an impact on the components of the nervous system that use acetylcholine, a neurotransmitter that facilitates the creation of memories. The brain's cognitive capabilities are enhanced by making this neurotransmitter more readily available.

Example-Acetylcholine precursors: Choline, Di methylamino ethanol (DMAE), (13).

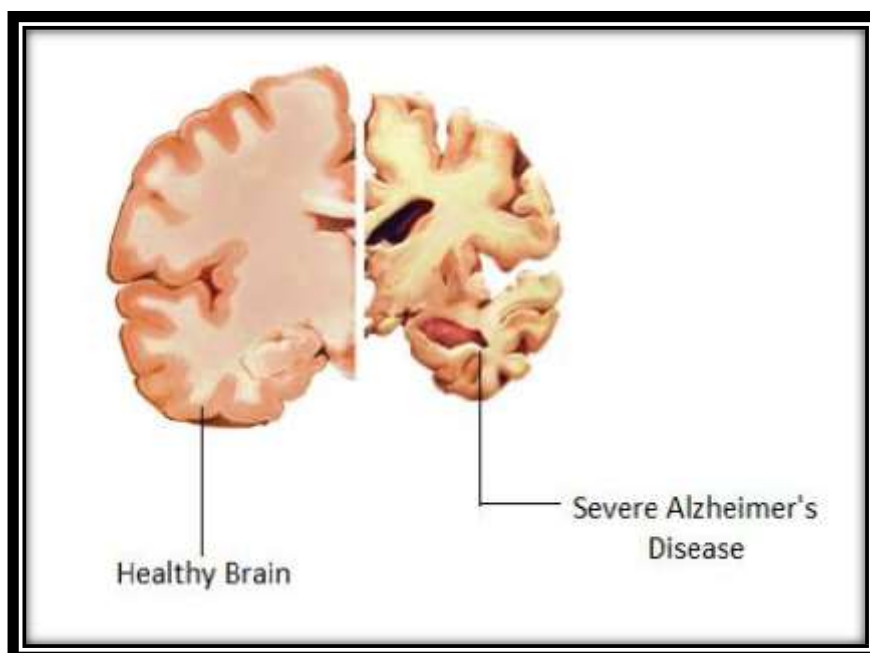
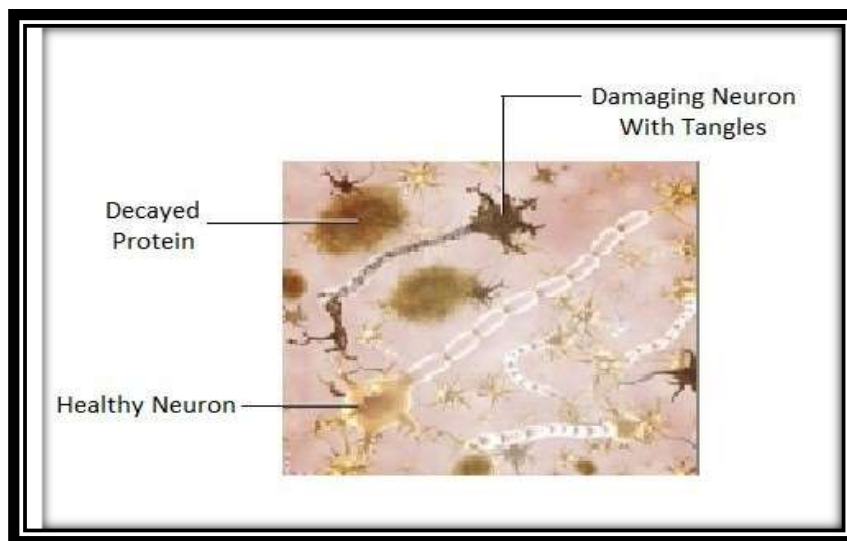


Fig.2 ComparativeView of Healthy & Unhealthy Brain

The development of dementia research is significantly impacted by the early and accurate diagnosis of Alzheimer's disease. The National Institute on Aging, the American Association of Retired Persons, the National Institute of Neurological and Communicative Disorders and Stroke, and the National Institute of Mental Health collaborated to sponsor a workshop for research planning to address the challenges associated with diagnosing AD in its early stages.(8,10).

The clinical examination, the patient's medical history, the evaluation of several cognitive domains, lab tests, and, in certain situations, an MRI or CT scan are all crucial components of the diagnosis process for Alzheimer's disease.

Clinical examination mostly reveals a decline in the capacity to encode information, along with further indications of aphasia and anoxia, but neurologic reflexes are otherwise normal. Patients may experience confusion, psychosis, yelling, and volatility as their symptoms worsen. The patient was in a terminal situation, bedridden, incontinent, and had been sick for 4.5years. (9)



Risk Factors

There are several types of risk factors that are involved in the case of Alzheimer's disease as we have studied earlier. Specifically, risk factors are those type of agents that helps to increase and induce the disorder in the body which leads to many complications ? In the case of Alzheimer's disease, smoking, alcohol consumption, and tobacco are some of the risk factors which lead to the induction of this disease into the CNS of the body, and along with this as mentioned earlier the excessive amyloid beta protein along with top protein also induces AD. As we know and as mentioned earlier the neuro fibre tangling is also the major cause that leads to Alzheimer's disease and this tagline in the intracellular and extracellular spaces decreases the language orientations and increases memory deficiency. Apart from this, some pathogens are also one of the causal organisms and risk factors that induce Alzheimer's disease (11)

Newly Updated Investigations

Earlier we have seen that many drug therapy is and other therapies shown some effective results for the treatment of Alzheimer's disease but they are more of a conventional approach and in recent times there are some new approaches and they are mainly the surgical approaches which includes

- Gene therapy
- Inter ventricular infusions
- Tissue grafting
- Electrical neuro stimulation
- Cerebro spinal fluids hunting

From the above methods gene therapy and electrical neuronal stimulation have shown good and effective results for the treatment in a surgical way but large scale integrations are currently in process.

Summary

After reading this article the readers can summaries that Alzheimer's disease is one of the biggest progressive neuro degenerative disorder in which the patient suffers from memory loss, dementia, amnesia language disorientation and shortness of breath. In this disease the nerve cells slowly gets damaged due to the deposition of amyloid beta and tau protein plaques in the intracellular and extracellular voids and also there is a neuro February tangling which decreases the power of memorization. This disease often starts above the age of 60 continuous far. There are various types of diagnostic tests and

measures that help accumulation to diagnose the condition. The treatment of this disease includes medications therapies and sum of the surgical processes. There are various types of clinical and clinical screening models the both in vitro and in Vivo characteristics and models.

Conclusion

According to the analysis in this study, AD has become the world's greatest cause of mortality and disability. In addition to being available, the search for comprehensive AD management is ongoing. We can also summarize that the cholinesterase inhibitors and the NMDA antagonist are much more useful in the case of Alzheimer's disease as they have got some good bioavailability results that the up to reduce the symptoms. Therefore, for the full management of AD, rigorous pre-clinical investigations and clinical trials for new therapeutic targets and potential medication candidates are necessary.

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