



Alzheimer's Disease: A Comprehensive Review of Pathophysiology, Diagnosis, and Management

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ABSTRACT :

Background: Alzheimer's disease (AD) is a progressive neurodegenerative condition that represents the leading cause of dementia worldwide. It is characterized by memory loss, cognitive decline, and changes in behavior, placing a growing burden on families and healthcare systems.

Objective: To provide a comprehensive, up-to-date review of the pathophysiology, clinical features, diagnostic tools, and management strategies for Alzheimer's disease.

Methods: A review of the current literature on AD including pathophysiology, diagnosis, treatment, and ongoing research. Major databases such as PubMed, Scopus, and Web of Science were searched for peer-reviewed studies and clinical guidelines.

Results: AD is marked by the accumulation of amyloid- β plaques, neurofibrillary tau tangles, and widespread neurodegeneration. Diagnosis is largely clinical but is increasingly aided by biomarkers and imaging. Treatments include symptomatic pharmacotherapy and emerging disease-modifying agents. Non-pharmacologic and lifestyle interventions also play key roles.

Conclusion: Alzheimer's disease continues to pose a major public health challenge. Advances in biomarker identification and targeted therapies offer promise. A multidisciplinary and individualized approach remains essential in management.

Keywords - Alzheimer's disease, dementia, amyloid, tau, neurodegeneration, diagnosis, treatment, management

1. Introduction

Alzheimer's disease (AD) is the most common cause of dementia...

2. Pathophysiology

AD pathology involves extracellular deposition of amyloid-beta...

3. Clinical Presentation and Diagnosis

The initial symptom is often episodic memory impairment...

4. Management

4.1 Pharmacological Therapy

Symptomatic treatments include cholinesterase inhibitors...

4.2 Non-Pharmacological Strategies

Non-drug interventions including cognitive stimulation...

4.3 Lifestyle and Prevention

Modifiable risk factors such as hypertension, obesity...

4.4 Supportive and Palliative Care

As AD advances, patients require escalating support...

5. Future Directions

Research into tau-targeted therapies, neuroinflammation modulators...

6. Conclusion

Alzheimer's disease is a multifactorial disorder with profound...

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