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ALZHEIMER'S DISEASE - SYMPTOMS, DIAGNOSIS, AND TREATMENT

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Abstract: *Alzheimer's disease is a neurodegenerative disorder characterized by the gradual loss of cognitive functions, including impairments in memory, speech, and behavior. This article explores the primary symptoms, diagnostic methods, treatment strategies, and preventive measures for Alzheimer's disease. It also examines the social and economic implications of the condition, along with modern approaches to slowing its progression.*

Keywords: *Alzheimer's disease, dementia, neurodegenerative disorder, memory impairment, cognitive functions, diagnosis, treatment, prevention, psychological support.*

Introduction: Alzheimer's disease is a neurodegenerative disorder first described by Alois Alzheimer. It is characterized by progressive dementia and typically begins in older adults, although, in rare cases, it can manifest at a younger age. Alzheimer's disease is the most common form of dementia in the elderly, resulting from the death of brain cells and disruption of neural connections. This disease primarily affects individuals over the age of 65 but can sometimes present in earlier stages, between the ages of 40 and 50. Currently, Alzheimer's disease affects more than 55 million people worldwide, and its widespread prevalence and treatment challenges make it a significant global issue.

Causes: The causes of Alzheimer's disease are associated with disruptions in the metabolic processes of the brain. Three main theories explain its development:

1. Cholinergic Hypothesis: A reduction in acetylcholine may contribute to inflammation and the formation of amyloid plaques.

2. Genetic Theory: The production of amyloid plaques is linked to genetic factors.

3. Tau Theory: Abnormalities in tau proteins disrupt nerve impulse transmission, leading to the formation of neurofibrillary tangles. These changes result in the progressive destruction of neurons and impairment of brain function. Genetic factors play a role in less than 10% of cases.

Symptoms: Alzheimer's disease is a progressive neurodegenerative disorder that leads to the degradation of neurons in the brain, disrupting their functions and causing cognitive impairments. It typically begins after the age of 65 but can also manifest at a younger age.

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The primary symptoms include memory decline, difficulties in speech, and changes in behavior.

Stages of Alzheimer's Disease:

1. Predementia: Mild cognitive impairments, such as difficulties in gathering and recalling information.

2. Early Dementia: Progressive memory and speech disturbances, challenges in completing daily tasks.

3. Moderate Dementia: Severe memory problems, loss of independent functioning, behavioral disturbances, and emotional instability.

4. Severe Dementia: Complete dependence on others for care, limited speech (mostly sounds), physical and emotional apathy.

General Symptoms

• Difficulty understanding conversations

• Aggressiveness

• Inability to express thoughts

• Memory impairment

• Frequent mood swings

• Behavioral changes

• Irritability

Diagnosis

Early diagnosis of Alzheimer's disease requires accurate anamnesis. Key considerations include: Key Observations:

1. Patient's Symptoms: Patients may describe their difficulties, but changes might not be noticeable to those around them initially.

2. Relatives' Observations: Family members might recognize symptoms that the patient is unaware of.

3. Core Indicators: Repetition of stories, memory issues, absent-mindedness, inability to complete daily tasks, disorientation in time and space, apathy, and personality changes.

Diagnostic Methods:

1. Specialized Tests: The Mini-Mental State Examination (MMSE) is used to assess cognitive functions, memory, speech, and emotional state.

2. Imaging Techniques: CT (Computed Tomography) and MRI (Magnetic Resonance Imaging) help rule out tumors and other conditions causing dementia.

3. PET Scans: Enables visualization of amyloid plaques in the brain.

4. Cerebrospinal Fluid Analysis: Confirms the diagnosis by detecting decreased levels of β-amyloid (Aβ-42) and increased levels of tau protein.

Differential Diagnosis:

To exclude other causes of dementia:

CT and MRI: Rule out brain tumors.

Ultrasound of brain vessels: Identifies circulatory encephalopathies.

Comparison with other diseases:

Alzheimer's disease differs from Parkinson's disease and Pick's disease in its characteristic symptoms and pathogenic mechanisms.

Treatment of Alzheimer's Disease Alzheimer's disease is incurable, but its progression can be slowed down with medications and supplementary methods.

Medications: Cholinesterase Inhibitors: Improve cognitive function in the early stages. Memantine: Protects the brain from toxic levels of glutamate. Additional Medications: Drugs to improve blood circulation, Antidepressants, Antioxidants.

Psychosocial Support:

1. Memory Exercises: Activities to stimulate memory retention.
2. Guided Independence: Using labeled objects and visual instructions.
3. Stress Reduction: Methods to maintain emotional stability.

Traditional Remedies: Ginkgo Biloba: Enhances brain function. Herbal Teas and Infusions: Support the nervous system and overall well-being.

Risk: Alzheimer's disease progresses, ultimately leading to a complete loss of the ability to self-care and perform daily tasks. The patient should not be left alone, as they may create dangerous situations for themselves and others (e.g., forgetting to turn off water or gas). The prognosis depends on caregiving. While the disease itself does not directly cause death, patients may die from accidents, late-stage frailty, or comorbid conditions.

Risk Group: Alzheimer's disease often occurs in elderly individuals over 65, especially after 70, when the risk is approximately 30%. Women are more susceptible. Although genetic predisposition is not the primary cause, there is a tendency for the early form of the disease. Risk factors include cardiovascular diseases, head trauma, and toxic effects. The disease is also more common among those engaged in unskilled labor, as mental activity helps form inter-neuronal connections, making their disruption more challenging.

Prevention of Alzheimer's Disease

To reduce the risk of Alzheimer's disease, the following measures are crucial:

Timely Treatment of Related Conditions: Manage diseases such as arterial hypertension and diabetes that affect brain blood vessels. Monitor post-stroke conditions, as they increase the risk of developing the disease.

Recommendations to Reduce Risk: Quit smoking. Limit alcohol consumption, though moderate intake of red wine may be beneficial. Follow a balanced diet, including fruits and

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vegetables, adhering to the Mediterranean diet. Consume foods rich in folic acid and omega-3 fatty acids, such as salmon and tuna. Engage in regular physical exercise, including walking. Participate in hobbies, solve crossword puzzles, and attend educational courses to maintain social and cognitive activity. A healthy lifestyle combined with mental exercises can slow down or prevent the progression of Alzheimer's disease.

Diet Recommendations: To maintain nervous system health and prevent Alzheimer's disease, include the following in your diet:

Fatty Acids: Add olive and flaxseed oils, as well as fish, to your meals. Limit fried and fatty foods to prevent atherosclerosis. Antioxidants: Eat fresh vegetables and fruits such as tomatoes, onions, garlic, cabbage, carrots, spinach, broccoli, melons, kiwis, and black currants. Fresh produce and freshly squeezed juices are more beneficial than canned products.

Vitamins and Minerals: Include vitamins A, E, C, and B3, as well as minerals like zinc and selenium. Use vitamin-mineral supplements if dietary intake is insufficient.

Conclusion

Alzheimer's disease is one of the pressing challenges in modern medicine, characterized by cognitive decline, memory impairment, and personality changes. Early diagnosis and a comprehensive approach to treatment can help slow the progression of the disease. Proper nutrition, physical, and mental activity play a crucial role in prevention. Research and innovative technologies are opening new possibilities for halting Alzheimer's disease.

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