Understanding Alzheimer's Disease

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Alzheimer's disease is a form of dementia that hinders cognitive function. Individuals affected experience problems remembering newly learned material, carrying out normal daily activities, and using proper judgement.[1,2] Alzheimer's disease causes 60-80% of dementias in aged patients, and approximately 10% of individuals 65 and older are affected. Alzheimer's disease is more common among women than men.[2]

Cause

Alzheimer's disease has genetic components, but the exact mechanism remains to be determined. Two types of abnormal proteins—plaques and tangles—have been studied in disease development and progression. Plaques consist of beta-amyloid proteins that are deposited *between* nerve cells, whereas tangles are made up of tau proteins that deposit *within* the cells. This causes damage to brain cells that regulate memory and personality, leading to cognitive impairment.[2]

Symptoms

The early stage of Alzheimer's disease is characterized by short-term memory loss. As the disease progresses, more severe neurological dysfunction, including hallucinations and paranoia, may develop.[2] Changes in personality or mood are common in Alzheimer's patients.[1] In the later stages, individuals experience difficulty remembering family members and other common objects or places. They may experience difficulty eating, drinking, or going to the bathroom. Most individuals will develop severe behavioral problems that may include yelling, wandering, or becoming physically destructive. They may also function inappropriately in social settings. Ultimately, Alzheimer's patients will become unable to walk and care for themselves as the disease worsens.[2]

Diagnosis

Diagnosis consists of completing neurological and physical examinations, collecting a thorough patient history, and performing imaging. Imaging may include computed tomography (CT) or magnetic resonance imaging (MRI). During the neurological examination, patients are asked to answer questions and complete simple tasks to assess cognitive function and mood. Physicians look for gradual onset and progression of memory loss with cognitive deficits in at least two areas. The disease may affect individuals at age 40, but it is most commonly diagnosed in people age 65 and older. Other neurological disorders, such as stroke or tumors must be ruled out in these patients. Diagnosis is later confirmed by analyzing brain tissue under the microscope to detect plaques or tangles during an autopsy.[2]

Treatment

Treatment consists of supportive care that may include medications called cholinesterase inhibitors, which improve cognition and memory in some individuals.[2] Unfortunately, treatment does not stop the disease from progressing, but it can slow the worsening of symptoms.[1]

As the disease progresses, a safe and familiar living environment should be provided for the affected individual. Performing the same routine each day may also help Alzheimer's patients feel more secure and in control.[2]

Prognosis

Since Alzheimer's disease progressively worsens over time, prognosis is poor. Individuals may have a shortened life expectancy with an approximate survival of 4-8 years after diagnosis.[1]

Prevention

Exercising, eating a diet low in cholesterol and saturated fats, and maintaining normal blood pressure reduce the risk of Alzheimer's disease. Completing puzzles or learning new activities can help maintain healthy cellular interactions within the brain, further reducing this risk.[2]

References:

1. Alzheimer's Disease and Dementia. (2019). What is Alzheimer's?. [online] https://www.alz.org/alzheimers-dementia/what-is-alzheimers.
2. Huang, J. (2018). Alzheimer Disease - Neurologic Disorders - MSD Manual Professional Edition. [online] MSD Manual Professional Edition. https://www.merckmanuals.com/professional/neurologic-disorders/delirium-and-dementia/alzheimer-disease.