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Alzheimer's Disease

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Alzheimer's Disease

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Introduction

Alzheimer's disease is a cause of dementia that affects older adults worldwide. The sixth leading cause of death among adults is Alzheimer's and an estimated five million Americans aged 65 years and older are living with this disease (Centers for Disease and Prevention, 2020). Alzheimer's is a progressive disorder that causes the brain cells to degenerate and die and is a continuous decline in thinking, behavioral and social skills that disrupts a person's ability to function independently (Mayo Clinic, 2018). There are certain risk factors including age and family history, but the cause of Alzheimer's remains unknown. While studies show certain treatments can delay the onset of Alzheimer's there is no definitive cure.



(Osman, 2019)

Reason for Topic

As a future nurse practitioner this disease process is important to understand as it is widely seen in healthcare settings. Alzheimer's disease is very prevalent in the United States and as a healthcare worker that will be focusing on family practice, Alzheimer's is a disease that needs to be fully understood to monitor for signs and appropriately diagnose a patient. Since there is currently no cure for the disease, staying up to date on research and how to potentially prolong the disease is essential.

Signs and Symptoms

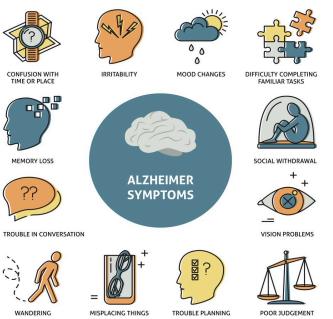
- Memory loss
- Behavioral changes
- Visuospatial deficits
- Word-finding deficits
- Difficulty with self care and daily activities
- Short shuffling steps
- Tendency to fall backwards
- Delusions
- Motor, sensory, and visual functions
- Paranoia
- Hallucinations
- Delusions
- Incontinence (Alzate, 2018)

Risk Factors

- Age
- Family history and genetics
- Sex
- Past head trauma
- Down Syndrome
- Mild cognitive impairment
- Poor sleep patterns
- Lifestyle choices
- Heart health
- Decreased social engagement (Mayo Clinic, 2018)

Prevention

- Optimal blood pressure
- Optimal BMI
- Optimal cholesterol levels
- Treating anxiety and depression
- Maintaining social activity
- Physical activity and exercise
- Smoking cessation
- Limiting alcohol intake
- Healthy diet (Hope, 2020)



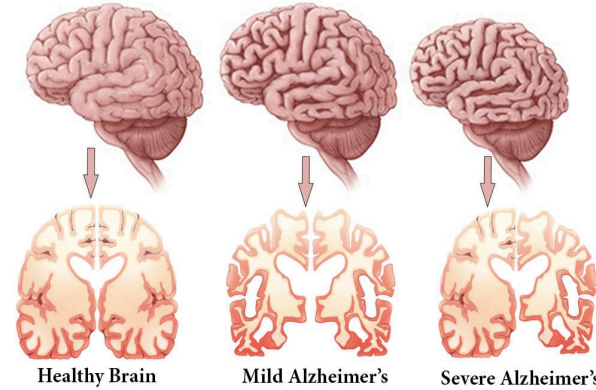
(Trend Health, 2019)

Pathophysiology

Alzheimer's disease is the most common cause of dementia among older adults. Dementia is the loss of cognitive functioning including thinking, remembering, reasoning and behavioral abilities to such an extent that it interferes with a person's daily life and activities (U.S. Department of Health & Human Services, 2019). The early stages of Alzheimer's begin with mild cognitive impairment and progresses to severe cognitive decline. There is currently no definitive treatment or cause of the disease. The destruction and death of nerve cells causes memory failure, personality changes, problems carrying out daily activities and other symptoms (Alzheimer's Association, 2020).

Alzheimer's disease is characterized by extracellular amyloid deposits predominantly composed of amyloid- β peptides, intracellular neurofibrillary tangles made of hyperphosphorylated, and abnormally phosphorylated Tau protein (Dong et al, 2018). Beta-amyloid is a leftover fragment of a larger protein and have a toxic effect on neurons and to disrupt cell-to-cell communication (Mayo Clinic, 2018). Tau proteins play a part in a neuron's internal support and transport system to carry nutrients and other essential materials. In Alzheimer's disease, tau proteins change shape and organize themselves into structures called neurofibrillary tangles. The tangles disrupt the transport system and are toxic to cells (Mayo Clinic, 2018).

The brain in Alzheimer's has moderate cortical atrophy, the frontal and temporal cortices often have enlarged sulcal spaces with atrophy of the gyri and as a result there is often enlargement of the frontal and temporal horns of the lateral ventricles (DeTure & Dickson, 2019).



(Verkhatsky, Parpura, Rodriguez-Arellano, & Zorec, 2019)

Significance of Pathophysiology

- The last stages of Alzheimer's disease affect the brains function of physical activities and includes difficulty swallowing, balancing, and bowel/bladder control which can lead to aspiration, pneumonia, infection, falls, fractures, bedsores, dehydration, and malnutrition (Mayo Clinic, 2018).
- There are correlations between depression, sleep disturbance, and anxiety with eventual Alzheimer's dementia development, both as individual factors as well as comorbid conditions (Burke, Cadet, Alcide, O'Driscoll & Maramaldi, 2018).
- While there is no cure for Alzheimer's there are two types of medications used to treat cognitive symptoms:
 1. Cholinesterase inhibitors which include Aricept, Exelon, and Razadyne are used for early to moderate stages. These medications prevent the breakdown of acetylcholine which is a chemical messenger important for learning and memory, delay or slow symptoms and prescribed to treat symptoms related to memory, thinking, language, and judgment.
 2. Memantine (Namenda) regulate glutamate which is a chemical involved in information processing, storage, and retrieval. And helps improve mental function and ability to perform daily activities (Alzheimer's Association, 2020).

Implications of Nursing Care

Since there is no cure of Alzheimer's disease, management of the disease and symptoms is crucial. Nurses occupy a position of trust in society and are ideally placed to offer information and advice to those for whom they care (Hope, 2020).

- Provide thorough assessments to screen for early signs of Alzheimer's
- Screen and treat for depression and anxiety
- Provide support/family involvement
- Teach families appropriate strategies to manage behaviors of the Alzheimer patient to prevent caregiver burden (Delfino et al, 2019)
- Encourage regular exercise as a non-pharmacological intervention as it could potentially reduce the risk of dementia and have therapeutic potential in patient diagnosed with Alzheimer's (Ströhle et al, 2015)
- Educate patient on modifiable risk factors including: diabetes, hypertension, obesity, high cholesterol, social isolation, lack of cognitive leisure activities, smoking, alcohol consumption, and poor diet (Hope, 2020)
- Prescribe appropriate medications for symptoms
- In late stages of Alzheimer's be mindful that patient cannot communicate pain or discomfort; frequent check ups will be required (Alzheimer's Association, 2020)
- Maintain quality of life

Conclusion

- With no definitive treatment or cure of Alzheimer's, the number of patients will only increase. More than five million American are living with Alzheimer's and by 2050 it is estimated this number will rise to almost 14million (Alzheimer's Association, 2020).
- 1 in 3 seniors dies with Alzheimer's or another dementia. it kills more than breast cancer and prostate cancer combined (Alzheimer's Association, 2020).
- Death rates for Alzheimer's disease are on the decline, unlike heart disease and cancer death rates that are on the increase (CDC, 2020)
- Although Alzheimer's disease is not a preventable condition there are modifiable risk factors
- While there is greater understanding of the pathophysiology of Alzheimer's disease, its causation has yet to be fully uncovered and it is likely to be multifactorial (Hope, 2020)
- Additional research, clinical trials, and funding is needed to prevent and treat Alzheimer's

References

Alzate, L. (2018). Alzheimer's disease. *Nutritional Perspectives: Journal of the Council on Nutrition*, 41(2), 28–35.

Alzheimer's Association. (2020). What is Alzheimer's Disease. Retrieved from <https://www.alz.org/alzheimers-dementia/what-is-alzheimers>

Burke, S. L., Cadet, T., Alcide, A., O'Driscoll, J., & Maramaldi, P. (2018). Psychosocial risk factors and Alzheimer's disease: The associative effect of depression, sleep disturbance, and anxiety. *Aging & Mental Health*, 22(12), 1577–1584. DOI:10.1080/13607863.2017.1387760

Centers for Disease and Prevention. (2020). Alzheimer's Disease. Retrieved from <https://www.cdc.gov/aging/aginginfo/alzheimers.htm>

Delfino, L. L., Komatsu, R. S., Komatsu, C., Neri, A. L., & Cachioni, M. (2019). Dementia management strategies associated with neuropsychiatric symptoms of elderly people with Alzheimer's disease. *Dementia*, 18(7-8), 2747-2759. DOI:10.1177/1471301218759233

DeTure, M., & Dickson, D. (2019). The neuropathological diagnosis of Alzheimer's disease. *Molecular Neurodegeneration*, 14 (32), 1-18. DOI:10.1186/s13024-019-0333-5

Dong, Y., MS, Lagarde, J., MD, Xicota, L., PhD, Corne, H., MS, Chantran, Y., PharmD, Chaigneau, T., MS, . . . Elbim, C., MD, PhD. (2018). Neurotrophil hyperactivation correlates with Alzheimer's disease progression. *Annals of Neurology*, 83(2), 387-405. DOI:10.1002/ANA.25159

Hope, K. (2020). Role of nurses in addressing modifiable risk factors for early Alzheimer's disease and mild cognitive impairment. *British Journal of Nursing*, 29(8), 460–469. DOI:10.12968/bjon.2020.29.8.460

Mayo Clinic. (2018). Alzheimer's Disease. Retrieved from <https://www.mayoclinic.org/diseases-conditions/alzheimers-disease/symptoms-causes/syc-20350447#:~:text=Alzheimer's%20disease%20is%20a%20progressive,person's%20ability%20to%20function%20independently.>

Osman, S. (2019). Alzheimer's Disease Definition, Causes, Diagnosis & Treatment. Retrieved from <https://www.news-medical.net/health/Alzheimers-Disease-Definition-Causes-Diagnosis-Treatment.aspx>

Additional Resources

