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Jodi Kiessling
kiessling1@otterbein.edu

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Dementia and the Role of Alzheimer Disease
Jodi Kiessling, RN, BSN
Otterbein University, Westerville, Ohio

Introduction
Dementia is a progressive disease in which deterioration of the central nervous system occurs, resulting in a disruption in intellect and behavior (McCase & Haight, 2019, p. 5). According to the World Health Organization (WHO), it affects about 35 million people worldwide with close to 10 million new cases worldwide added each year (Otterbein University). The diagnosis of dementia is very common in elderly and can be confused with normal aging. The most common cause of Alzheimer disease (AD) occurs in 50% to 70% of all cases (Larson, 2019, p. 3). It is a degenerative disease and has detrimental effects on the patients’ cognitions, family, and caregiver. As an emergency department nurse and a grand-daughter of a patient struggling with dementia, this has become a topic of interest.

Signs & Symptoms
Clinical presentation is in a gradual onset and involves impairment in cognition, language, and functional ability.
- Forgetfulness: chief complaint
- Difficulty remaining new information
- Inability to complete complex tasks
- Trouble with planning
- Mood disturbance
- Spatial orientation
- Sleep disturbance (Larson, 2019, p. 4)

Underlying Pathophysiology
Examples of dementia are very complex and meanigful. Alzheimer disease (AD) and vascular dementia (VaD) are two major forms. Alzheimer disease is more common and accounts for 60% to 80% of all cases (Larson, 2019, p. 5). It is a degenerative disease and has detrimental effects on the patients’ cognitions, family, and caregiver. As an emergency department nurse and a grand-daughter of a patient struggling with dementia, this has become a topic of interest.

Causes of dementia are varied and can include:
- Amyloid plaques and neurofibrillary tangles (the characteristic features of AD).
- Vascular pathology (e.g., small vessel disease and large vessel disease).
- Traumatic brain injury.
- Infections such as HIV/AIDS.
- Metabolic disorders, such as hypothyroidism.
- Hormonal disorders, such as hypogonadism.
- Genetic disorders, such as Huntington disease.
- Medications, such as anti-epileptic drugs.
- Nutritional deficiencies, such as vitamin B12 deficiency.

Pathophysiology
The hallmark pathological features of Alzheimer disease include the presence of amyloid plaques and neurofibrillary tangles. These brain lesions are associated with cognitive impairment and memory loss. The Alzheimer disease process involves a complex interplay of factors, including genetics, environment, and lifestyle. The disease progresses in stages, with early cognitive decline progressing to frank dementia. The characteristic features of the disease are the presence of amyloid plaques and neurofibrillary tangles, which are thought to play a role in the development of dementia.

Significance of Pathophysiology
Research has identified several factors that may contribute to the development of Alzheimer disease. These factors include genetics, lifestyle, and environment. The role of genetics is well established, with a number of genetic markers associated with an increased risk of Alzheimer disease. Lifestyle factors, such as diet, exercise, and education, also play a significant role in the development of the disease. Environmental factors, such as exposure to toxins and stress, may also contribute to the progression of Alzheimer disease.

Nursing Implications
- Nursing must consider the need for early and frequent approaches for dementia care, such as exercise and cognitive stimulation.
- Patient safety should be continually monitored and environment modified to prevent injury.
- Education is very important for the primary caregiver. Dementia disease process and treatment options should be discussed with the patient and family.
- Early interventions of proper nutrition, sleep, stimulation, and management of chronic disease, such as hypertension, diabetes, heart disease, etc., with medication compliance is an important part of care and may slow disease progression.
- Working on side effects of treatment as well as changes in behavior and affective symptoms are essential parts of the assessment.
- The patient should be encouraged to perform or participate in activities of daily living with a goal of maintaining independence for as long as possible.
- Advance directives and goals of care should be discussed with the patient and family.

Conclusion
Alzheimer disease is a progressive disease causing cognitive and functional decline with the behavioral sign of plaques and tangles within the brain. Genetics, inflammation, accumulation of beta amyloid proteins and breakdown of the blood-brain barrier can all contributing factors in the diseases. Treatment is palliative and is focused on symptom management and support of the patient and their family.

Case Study
A 75-year-old female presents to her primary care provider with complaints of disorientation (especially at night), forgetfulness, and difficulty completing activities of daily living. The diagnosis of Alzheimer disease was established after thorough history and physical exam and physical and psychological evaluation. The patient has a history of hypertension, diabetes, and obesity. The patient’s cognition is impaired, and she has difficulty completing activities of daily living. She is currently taking medications for hypertension, diabetes, and obesity.

References Cited