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Understanding Dementia and Prevention

Alzheimer's disease was discovered on November 25th, 1901, by Doctor Alois Alzheimer when he examined and observed a patient named Auguste Deter at the Frankfurt Asylum for the insane and epileptic. Auguste Deter was only forty-six years old. She had strange behavioral symptoms and loss of short-term memory. Mrs. Deter died at the age of fifty-one. All her records and her brain were analyzed by Dr. Alzheimer who used cell-stain techniques to identify amyloid plaques and neurofibrillary tangles with the cortical grey matter of the brain. As a result, in 1906, he exposed the first documentation of these pathologic findings with the clinical symptoms of presenile dementia. Dominguez et al. 2025 states that “dementia as a polyetiological neuropsychiatric syndrome is characterized by impaired memory and other cognitive dysfunctions” Dominguez et al. (2021). Dementia is caused by changes in the brain, abnormal accumulation of proteins known as amyloid plaques and tau tangles such as stated by Patterson et al. (2015), “amyloid beta plaques in Tau protein phosphorylation in interneural neurofibrillary tangles are the main in classic features of Alzheimer's disease pathology” (Patterson et al. 2015).

Alzheimer's disease, as a neurodegenerative disease, is the most common type of dementia resulting in up to 70% of all cases. Other types of dementia are vascular dementia, Lewy bodies disease, and frontal temporal dementia to mention some. Alzheimer's disease is a progressive disease that affects cognitive abilities, memory, and other important mental functions. It most commonly begins with mild memory loss affecting the ability to carry on a conversation. Memory problems are the first warning signs of Alzheimer's disease.

There are an estimated eight million new diagnosis every year. It affects over 6.7 million people in the United States. About 55 million people are living with dementia worldwide and it is expected to double every twenty years. Currently, between 300,000 to 360,000 individuals with Alzheimer's disease are people under the age of sixty-five. These populations have what is called younger-onset or early-onset Alzheimer's disease. Most people with young-onset or early-onset Alzheimer's manifest symptoms of the disease when they are between thirty and sixty years old.

Dementia is the sixth leading cause of death in the United States as more people die from it than from breast cancer and prostate cancer combined. As of today, there is no cure or treatment effective enough to minimize the effects of dementia. Therefore, for someone diagnosed with Alzheimer's disease, it is a very difficult and stressful circumstance. This is why it is very important for people such as caregivers to be fully knowledgeable and supportive about the concept of the disease. Knowing about the disease is the best and most effective way to provide support for all those involved. The disease changes their life entirely, affecting not only the person diagnosed but the entire family. That is why it is very important to understand the disease.

Fortunately, there have been studies that show a positive impact on how people can slow down the course of the disease. For example, there are drugs that help treat the symptoms as well

as natural methods that can also help to manage and to slow the progression of the disease. Some of the following natural methods include exercising, socializing, eating healthy as well as healthy habits. Healthy eating habits are associated with cognitive benefits such as improved memory. In fact, there have been many studies suggesting that what people eat affects the aging brain's ability to think and remember. It also has been shown that a healthy diet is equally effective and beneficial in an age of cognitive outcomes. What people eat and how active people are can contribute either positively or negatively to people's health. That is one positive change that people can make to slow the symptoms of the disease.

The Med Diet, Dash, and Mind diets, to mention some suggest that a plant-based diet that includes vegetables, fruits, nuts, whole grains, legumes, and low-fat diet are very beneficial for nourishing the brain. According to Dominguez et al. (2021), "Data from epidemiological studies suggest that following a healthy balanced diet and lifestyle which has been confirmed to reduce cardiovascular risk may also help with preventing or delaying the onset of Alzheimer's disease" (Dominguez et al. 2021). This diet also advocates minimizing the consumption of all processed foods, red meats, and sweetened beverages they are related to an increased risk of Alzheimer's disease. An estimation of 40% of dementia cases can be delayed or prevented by decreasing the intake of meat. Dominguez et al. (2021) continues that, "in experimental studies the western diet enhanced brain inflammation in the production of beta amyloid protein" (Dominguez et al. 2021)

Another factor that can slow or prevent dementia is exercise. Many studies have demonstrated the benefits of being physically active. In fact, 3% of all dementia cases can be prevented when people increase their physical activity. For Alzheimer's disease particularly, the risk can be reduced by 45%. Therefore, people who are physically active can significantly slow the process and complications of dementia such as mobility, physical functioning, rigidity,

functional limitations, weight loss, postural balance, emotional state, insomnia, and social engagement.

It has been proved that Physical exercise and mobility helps significantly to reduce the effects of dementia. By walking frequently, it can help with mobility, that will benefit rigidity and consequently with the ability of performing outdoor activities along with the activities of daily living like dressing, bathing, and getting in and out of bed. Exercise is crucial for people with dementia because even in the early stages of the disease, people are exposed to developing difficulties maintaining a proper or normal postural balance that can result in falls. Exercise also improves memory, reduces sleep disorder symptoms, and improves the quality of sleep.

Sleep is essential to improve memory and to remove the excess of beta amyloid in hyper phosphorylated Tau accumulated in Alzheimer's Disease patient's brain. Former studies have proved that melatonin may be favorable in some cases of Alzheimer's disease, helping with nocturnal behaviors and the physiological symptoms of dementia. Dominguez et al. (2021) says that "there appears to be a bidirectional relationship between sleep patterns and dementia with disturbed sleeping representing both a risk factor for, and symptom of, the neurocognitive syndrome" (Dominguez et al. 2021). Finally, social engagement is another critical factor that can benefit people with the disease. A person that is exposed to connections with other people outside, in the community, or social events have better health outcomes, decreasing loneliness, improved quality of life, and the prevention of dementia. Dominguez et al. (2021) also states that "A more recent meta-analysis including 31 cohort in two case-control studies comprising 2,370,452 participants found the poor social engagement indices were associated with increased dementia risk" (Dominguez et al. 2021).

Alzheimer's disease is a progressive condition that affects millions of people worldwide and which as of today there is no cure for. Many people are affected, including family members who are the ones that support their loved ones. However, people living with the disease benefit from the many methods that exist nowadays that help them overcome the disease such as exercise, healthy eating habits, and socialization that can help to dramatically reduce the risk of Alzheimer's. By being informed and knowledgeable about the disease, we can vastly improve how we support not only those diagnosed but loved ones and family members as well.

Works Cited:

Dominguez LJ, Veronese N, Vernuccio L, Catanese G, Inzerillo F, Salemi G, Barbagallo M. Nutrition, Physical Activity, and Other Lifestyle Factors in the Prevention of Cognitive Decline and Dementia. Nutrients. 2021 Nov 15;13(11):4080. doi: 10.3390/nu13114080. PMID: 34836334; PMCID: PMC8624903.

Grabher BJ. Effects of Alzheimer Disease on Patients and Their Family. J Nucl Med Technol. 2018 Dec;46(4):335-340. doi: 10.2967/jnmt.118.218057. Epub 2018 Aug 23. PMID: 30139888.

Pitkälä K, Savikko N, Poysti M, Strandberg T, Laakkonen ML. Efficacy of physical exercise intervention on mobility and physical functioning in older people with dementia: a systematic review. Exp Gerontol. 2013 Jan;48(1):85-93. doi: 10.1016/j.exger.2012.08.008. Epub 2012 Aug 31. PMID: 22960590.

Shirolapov I, Zakharov A, Smirnova D, Khivintseva E, Sergeeva M. Aging Brain, Dementia and Impaired Glymphatic Pathway: Causal Relationships. Psychiatr Danub. 2023 Oct;35(Suppl 2):236-244. PMID: 37800234.