

Dementia: More Than Meets the Eye

For a disease that affects such a large percent of the population, it would be expected that most people understand dementia. Unfortunately, there are many misconceptions about dementia and its most common form: Alzheimer's disease. There are other forms of dementia other than Alzheimer's, such as Vascular dementia, Parkinson's Disease dementia, Frontotemporal dementia and others. Typically, these forms are not discussed or acknowledged in society which leads to ignorance and misdiagnosis. It is vital for the population to understand dementia and its different subtypes in order to have the best treatment and care for those with the degenerative disease.

Before discussing the different subtypes of dementia, it is important to understand the basics. Dementia is characterized as "a decline in cognition involving one or more cognitive domains (learning and memory, language, executive function, complex attention, perceptual-motor, social cognition)" (Larson 2017). Most people are aware of this aspect of dementia, but are unsure of how the disease progresses, how it is caused, and the different types. How the disease develops depends on the type of dementia the person has, but generally dementia is caused "when the communication in the brain is disrupted, whether short-term or long-term, which affects a patient's mental functions" (Fink, Snook & Adams, 2017, p. 185). This also brings up the point that there are short term dementias and long term dementias. Short term dementias are sometimes caused by traumatic experiences or drugs and alcohol. They are mostly treatable and do not persist throughout the person's life. Long term dementias are what are commonly thought of as dementia in society and while they are treatable, there is no cure. Common forms of long term dementia include Alzheimer's Disease, Vascular Dementia, Dementia with Lewy-Bodies, Parkinson's Disease Dementia, Frontotemporal Dementia, and

Mixed dementia. In 2015, around 47 million people around the world had at least one form of dementia (Rakesh, Szabo, Alexopoulos, & Zannas, 2016, p. 121). With such a large portion of the population living with dementia, understanding the basics of each form will benefit society as a whole.

Subtypes of Dementia

Alzheimer's disease is by far the most known form of dementia, however this subtype is misunderstood all the same. Alzheimer's is defined as "a progressive neurodegenerative dementing disorder responsible for severe cortical atrophy in selective regions of the brain such as the temporal, medial-temporal, limbic, frontal and prefrontal cortices" (Hess & Smart, 2017, p. 1). Damage to these areas of the brain lead to problems with memory, learning, other cognitive skills, and motor functions which are commonly known effects of Alzheimer's. Regarding memory, Alzheimer's patients generally show effects of anterograde amnesia which include difficulty moving memories from short term to long term memory; they also have difficulty recalling old memories (Irish & Piolino, 2016, p.53). Since memory loss is generally associated with old age, sometimes the problem goes untreated for some time before realizing that the cause is Alzheimer's. However, the discovery that "damaged and dysfunctional cerebral microcirculation is one of the earliest predictors of [Alzheimer's Disease]" allows a diagnosis and treatment to be issued sooner, slowing the progression of the disease (Hess & Smart, 2017, p.3). This discovery is also used to judge the severity and progress of the disease. Another way to gauge the severity of Alzheimer's is looking for "excessive deposition of fibrillar aggregates of amyloid beta peptides (Ab1-40 and Ab1-42) in afflicted regions of the brain" (McCarty, 2006, p. 682). With the ability to screen and track the disease, patients receive better quality of care and more research can be done to discover a cure.

Following Alzheimer's disease, Vascular Dementia is the next most common form of dementia. Vascular Dementia is "associated with cerebrovascular and cardiovascular diseases" (Chang, Liu, Bilinski, Xu, Steiner, Seto, & Bensoussan, 2016, p.1). It involves not only cognitive deficits but physical degeneration as well. Unlike Alzheimer's, "memory remains intact with attentional and executive functioning disproportionately impaired" (Hess & Smart, 2017, p.3). This means that those with Vascular Dementia do not have the anterograde amnesia that is usually associated with dementia; however, they do experience problems with more general cognitive function. The physical problems associated with Vascular Dementia are also extremely debilitating: "...factors associated with [Vascular Dementia] include hypertension, hyperlipidemia, diabetes, genetic disposition, cardiac diseases, physical inactivity, and obesity" (Chang et al., 2016, p.2). This makes it extremely difficult to carry out daily activities such as hygiene, cooking, and simply walking about the house. These tasks become even more difficult, since it is extremely common for Vascular Dementia and other forms of dementia to coexist (Chang et al., 2016, p.1). In order for those living with Vascular Dementia to continue living a productive life, treatment becomes extremely important. As of 2016 there are no direct licensed treatments for Vascular dementia, however there are treatments for the side effects such as hypertension. (Greenan et al., 2016, p.10). There are alternative forms of treatment that have been proven to help with the symptoms as well; it has been found that a form of scalp acupuncture can stimulate the lesion area which produces therapeutic effects (You et al., 2017, p. 2). Unfortunately, without more knowledge on the disease, treatment and a potential cure are far from being available. Society becoming knowledgeable on Vascular Dementia will create a drive to develop these necessary breakthroughs and help those with the disease.

As mentioned before, it is common for Vascular Dementia and other forms of dementia to coexist. This is referred to as Mixed Dementia. It is defined as “cognitive decline sufficient to impair independent functioning in activities of daily living resulting from the combination of [Alzheimer’s Disease] and vascular pathology (Kang et al., 2016, p.134). This disease can be extremely difficult to live with as both forms of dementia express themselves at the same time. Those afflicted show cognitive problems such as poor word fluency, low memory, and low cognitive function as well as the physical symptoms of Vascular Dementia (Kang et al., 2016, p.135). There is only one form of treatment specifically for Mixed Dementia; (acetyl) cholinesterase inhibitor therapy (GAL-INT-6, galantamine), which is still in clinical trials. Most doctors treat Mixed Dementia by giving patients treatment for Alzheimer’s and Vascular Dementia (Zekry & Gold, 2010, p. 715). The fact that there is almost no personalized treatment for Mixed Dementia showcases how much of a need there is for more research on the disease. There have been some that believe that Cholinesterase inhibitors could become a part of treatment, but there are health and safety concerns involving test subjects, so progress is slow (Zekry, Gold, 2010, p 723). With more people getting diagnosed with the disease there is concern with the lack of treatment available and poor prognosis for those afflicted.

A less common known form of dementia is Dementia with Lewy Bodies. This form of dementia is often misdiagnosed or missed completely due to lack of awareness. The disease is caused by “the presence of Lewy bodies— intraneuronal inclusions consisting mainly of α -synuclein aggregates and ubiquitin—in the neocortex, forebrain, brainstem, and other parts of the nervous system” (Mueller, Ballard, Corbett, & Aarsland, 2017, p.390). These Lewy Bodies are extremely harmful to the nervous system and cognitive function. Symptoms associated with Lewy Bodies include motor syndromes, “autonomic dysfunction, olfactory dysfunction and rapid

eye movement (REM) sleep behavior disorder (RBD),” and hallucinations (Chiba et al., 2012, p. 274). While all of these symptoms are good indicators for a diagnosis, Dementia with Lewy Bodies is generally misdiagnosed: “One common pitfall is the misdiagnosis of dementia with Lewy bodies as delirium, which can lead to patients being treated with antipsychotics.” (Mueller et al., 2017, p. 392). While this may not seem like a big deal, those with Lewy Bodies “have a high risk of severe sensitivity reactions to antipsychotic drugs” which can lead to even more cognitive problems, severe reactions, and even death (Mueller et al., 2017, p.390). Unfortunately, the prognosis for Lewy Bodies is not good, especially when compared to Alzheimer’s Disease; generally, there are “increased costs, accelerated nursing-home admission, and decreased time to death” along with the risk of being misdiagnosed and mistreated, (Mueller et al., 2017, p. 396). Proper screenings and tests can increase the lifespan of those with Dementia with Lewy Bodies and newer technology is making this possible.

Parkinson’s disease is known in society today, but many do not realize that there is the potential to escalate to Parkinson Disease Dementia. This form of dementia “is defined as cognitive impairment that has reached the stage of dementia and which appears in the context of preexisting [Parkinson’s disease]” (Garcia- Ptacek, & Kramberger, 2016, p.262). Parkinson’s disease dementia is not commonly discussed in society, but “the majority of patients with established [Parkinson’s disease] and disease duration of more than 10 years develop multiple cognitive deficits with significant functional impairment resulting in a dementia syndrome (Garcia-Ptacek, & Kramberger, 2016, p.263). So the longer that a patient has Parkinson’s, the more likely they are to develop Parkinson’s disease dementia. The symptoms associated with Parkinson’s disease dementia include “more advanced age, more severe motor symptoms, in particular, non–tremor-dominant symptoms, visual hallucinations, and amnesic and

multidomain [Mild Cognitive Impairment]” which is when there is cognitive decline faster than average (Garcia-Ptacek, & Kramberger, 2016, p.263). These declines in functionality lead to a faster death than if the patient were to just have Parkinson’s disease; in addition, “mortality in [Parkinson’s disease dementia] is higher than in [Parkinson’s disease]” (Garcia-Ptacek, & Kramberger, 2016, p.261). As with most dementias, there is not cure but treatment is available. Treatments include cholinesterase inhibitors (ChEIs) for the cognitive decline and Levodopa for motor issues (Broadstock, Ballard, Corbett, 2014, p.775). Before treatment can be administered, a diagnosis must be made. It is important to be screened because contrary to popular belief, Parkinson’s disease is not just genetic. There is a genetic factor, but there are sometimes mutations to the genes that can cause the disease (Garcia-Ptacek, & Kramberger, 2016 p.263). So, especially if you have a family history, screening must be done in order to get the best treatment possible.

Frontotemporal dementia is an extremely inhibiting form of dementia with many cognitive deficits. The areas of the brain that are affected by this type of dementia include the frontal and temporal lobes, as suggested by the name, and the frontoinsular, orbitofrontal, and medial pre-frontal cortices (Irish & Pilino, 2016, p.56). This leads to a large percent of the brain deteriorating which causes many cognitive deficits. Those with Frontotemporal dementia “typically exhibit marked word-finding difficulties, impaired comprehension, as well as semantic paraphasias, agnosia for objects, and prosopagnosia, in the context of relatively preserved visuospatial skills and everyday memory” (Irish & Piolino, 2016, p. 56). In simpler terms, they have trouble speaking, are unable to recognize objects and faces, and have problems with memory and spatial relations. The skills inhibited are important in our everyday life which leads to dependency on others. There is also a subtype of Frontotemporal dementia called Semantic

dementia. This subtype is one of the most debilitating since it results in the “loss of general conceptual knowledge of the world (Irish & Piolino, 2016, p. 56). In short, people are at a complete loss with what is going on around them. For them, it is difficult to comprehend anything which is hard for them and for those around them. Treatments for these difficult symptoms include serotonergic antidepressants, which help elevate mood and behavioral disturbances (Buoli, et al., 2017, p.166). Even still, more research is needed in order to improve the quality life for those with Frontotemporal dementia.

Effects of Dementia

As mentioned before, Frontotemporal dementia is extremely hard for those afflicted, but also for the people in their lives that must care for them such as family, neighbors, and caretakers like nurses and hospice. With such a large portion of the aging population developing dementia, many people have to learn to care for those with it. Especially in the later stages of dementia, it is hard to see those who have cared for you struggling to perform basic tasks such as speaking: “It hurts Marie to see her mother searching for words. She never gets to the point, which makes her feel embarrassed” (Solvoll, 2017). In addition to the hurt many feel when a loved one is struggling; they have to endure many outbursts due to frustration. Many people with dementia become extremely frustrated, irritated, and develop short tempers due to their struggles, and may take it out on those around them (Solvoll, 2017). When people attempt to assist their upset loved ones with their more difficult tasks, it can become extremely tasking. In order to avoid the unintentional emotional abuse, caregivers and family members should become educated on the disease. Basic dementia education should include “instruction and training on types of dementia, symptoms of each type, factors that can calm a situation and factors that can worsen a situation” (Fink et al., 2017, p.187). This education would be extremely helpful for family members who

want to understand what their loved one is going through. Basic questions regarding the disease and treatment should be answered and will help visiting family members understand what to do and how to help when the afflicted becomes frustrated. Support for those with dementia is key to helping them live the rest of their life out as best as they can, so knowing how to support is the best thing a loved one can do while the afflicted is going through treatments.

Screening for Dementia

While there is no cure for dementia, there are many treatments that are used and ways to help stop the progression of the disease. In order to be best treated, it is important to be properly diagnosed as early as possible. Especially for Dementia with Lewy Bodies, delayed or incorrect treatment can be detrimental due to the progressive trait of this disease: “~50% of patients with DLB remain undiagnosed, resulting in delayed treatment for their distressing symptoms because of poor sensitivity of clinical criteria when evaluated against autopsy findings in a large number of patients” (Vincenzo et al., 2017, p. 318). With new medical breakthroughs surely to occur, this statistic is predicted to drop, but until then medical professionals must be extremely careful when reading the test results concerning dementia. The tests used can be basic or in depth depending on what type of dementia the patient is thought to have and what stage the disease is at. One of the most basic tests is called the Mini-Cog. This test “consists of a clock drawing task (CDT) and an un-cued recall of three unrelated words” (Larson, 2017). This simple task helps mark the progression of the disease when performed on the same patient more than once over the course of their dementia. Surprisingly, some people with acute dementia cannot draw a simple clock. Results vary from the patient drawing the hands of the clock in the wrong position to not even knowing what a clock is supposed to look like. Another simple test doesn’t have to be administered by a professional. The Montreal Cognitive Assessment (MoCA) is a simple test that

can be taken online by anyone and is “designed to detect cognitive impairment in older adults... It is a 30-point test that takes approximately 10 minutes to administer” (Larson, 2017). The fact that there are online screenings available to anybody is helpful to those who may not be able to afford a doctor’s. The MoCA test and other online screenings help ease the minds of people with a hunch that they, or a loved one, might have dementia. These tests should not be the only ones that people use since it is an extremely basic test and the opinion of a professional should be considered. The most popular screening used is the Mini-Mental State Examination (MMSE). This short test “tests a broad range of cognitive functions including orientation, recall, attention, calculation, language manipulation, and constructional praxis” (Larson, 2017). While the MMSE is even shorter than the MoCA it is a reliable tests that most physicians use and can understand quickly. The results from these screenings are key in the treatment of dementia and the quality of life that the afflicted can have once diagnosed.

Reducing Risks

While dementia is unavoidable for some people, there are some things that can be done earlier in life to prevent dementia and other cognitive deficits. Simple lifestyle changes such as diet, exercise, and maintaining a healthy blood pressure and cholesterol level can reduce the risk of developing dementia (Fink et al., 2017, p.186). Exercise is important, especially concerning Mixed dementia and Vascular dementia since “exercise has long been recommended and demonstrated as an effective therapeutic intervention for hypertension” which, as mentioned before, is associated with those types of dementia (Hess & Smart, 2017, p. 3). Keeping a certain diet has also been found to help with different types of dementia. Eating heart healthy foods will help prevent Vascular Dementia, but other diets have been found to reduce risk for Alzheimer’s Disease such as “a high dietary intake of fish” or a more Mediterranean diet which focuses

mostly on fruits, vegetables, and fish (McCarty, 2006, p.687) (Rakesh, Szabo, Alexopoulos, & Zannas, 2016, p. 122). Another study has shown that “high caffeine intake may decrease risk [Alzheimer’s Disease]” (McCarty, 2006, p.689) which is surprising since people are told to stay away from caffeine for many health problems. These simple fixes can be extremely helpful to those at risk for the different forms of dementia.

As mentioned before, there is currently no cure for dementia. While there are treatments available for the different subtypes, there is still a large amount of the population struggling to perform basic life functions due to the degenerative disorder. With a cure, the pain and suffering of the afflicted and their families will end and they can enjoy the later years of life. Luckily, technology improves so rapidly now that it is only a matter of time before more treatments and cures are found. Dementia will no longer be such a debilitating disease and people would not live in fear that they will be reduced to bed rest and twenty-four hour care. If society shows that it cares and that it is informed, there will be more of a drive to create this cure and many lives will be improved.

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