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MEDICAL CANNABIS: CAN IT BE USED IN DEMENTIA PATIENTS?

WHAT IS DEMENTIA?

The World Health Organization (WHO) defines dementia as "an umbrella term for several diseases affecting memory, other cognitive abilities and behavior that interfere significantly with a person's ability to maintain their activity of daily living".[1] Alzheimer's disease is widely considered to be the most common form of dementia and is likely responsible for between 60-70% of all dementia cases worldwide.[2] Even though age is considered a risk factor for dementia, dementia cannot be considered a normal part of the aging process. Typical symptoms of dementia include impairment of cognitive function (from simply forgetting memories to forgetting people), worsening ability to communicate, behavioural changes, loss of emotional control, aggression, and loss of motor control. The WHO contends that dementia is a public health priority, especially as approximately 10 million new cases of dementia are seen worldwide every year.[2]

CANNABIS AND DEMENTIA RESEARCH

Research into the use of cannabinoids in dementia is in its infancy. Traditional pharmacology is no longer the best option to treat the symptoms of dementia, as the risks considerably outweighs the rewards.[3,4] Cannabinoids may be the solution for treating dementia due to their neurobiological and neuroprotective effects. In 2010, Walther et al. stated that "Because of their broad impact on neurotransmission through retrograde signaling and involvement in inflammation, endocannabinoids have been suggested as modulators of various neurodegenerative diseases".[5] One issue that has hampered this research field is that different strains of cannabis can have different effects depending on the percentage of tetrahydrocannabinol (THC) and cannabidiol (CBD) contained in the cannabinoids.[6]

THESE LABORATORY RESULTS HAVE BEEN VERY PROMISING IN DEMONSTRATING HOW CANNABINOIDS COULD HELP TREAT PEOPLE SUFFERING FROM DEMENTIA SYMPTOMS

as well as the possibility of treating the disease itself. Aso et al.,[7] Eubanks et al.,[8] Walther et al.,[9] Ramírez et al.,[10] and Grinspoon and Bakalar[11] explored preliminary laboratory studies and showed that cannabinoids cannot only treat symptoms of Alzheimer's, but can also interrupt the disease process. Eubanks et al. found a link between the endocannabinoid system and Alzheimer's disease, which they believe will provide a new focus for the treatment of Alzheimer's patients.[8] Specifically, Eubanks et al. stated "...AChE inhibitors such as THC and its analogues may provide an improved therapeutic for Alzheimer's disease, augmenting acetylocholine levels thereby simultaneously treating both the symptoms and progress of Alzheimer's disease.".[8]

Krishan et al. found in their meta-analysis of existing cannabinoid and dementia research that laboratory studies had yielded exciting results in terms of how useful cannabinoids can be in treating neurodegenerative

diseases.[12] Given the behavioural symptoms of dementia, specifically Alzheimer's disease, cannabinoids may be useful as an antipsychotic replacement. As has been seen in studies for veterans with post-traumatic stress disorder, cannabis has been able to reduce aggression as well as have a calming effect. In fact, Krishan et al. further highlighted that "Neurodegeneration is a feature common to the various types of dementia and the neuroprotective effects of cannabinoids may therefore be beneficial in slowing the progression of these diseases".[12]

Nevertheless, Shelef et al. executed an open-label study of 11 patients with Alzheimer's disease who were treated with medical cannabis oil for 4 weeks and found that there was a significant reduction in patients' symptoms.[3,4,13] Woodward et al. explored how dronabinol could act as an adjunctive treatment for 40 patients with dementia in a retrospective study. The investigators found that these patients had a significant decrease in agitation, as well as improvement in sleep and meal consumption.[14]

Interestingly, researchers at the Salk Institute in a laboratory exploratory model found there was preliminary evidence that cannabis can help to encourage the cellular removal of amyloid beta. Amyloid beta appears to play a major role in the plaque deposits in the brain, a feature of Alzheimer's disease.[15] Even though there has been a growing body of literature surrounding preclinical research into cannabinoids and dementia, this research has yet to play a role in the clinical treatment of dementia patients.

CLINICAL CASE: WORLD WAR II VETERAN WITH VASCULAR DEMENTIA

These preliminary findings were recently born out in a clinical case of an 88 year-old-World War II veteran with vascular dementia, who had been on standard dementia medications but whose condition continued to deteriorate. His son, who is a veteran who served in Afghanistan, returned to Canada to care for his dementing father. The elderly veteran's condition was severe. He was having nightmares at night and flashbacks during the day of fighting in World War II with uncontrollable anger outbursts. Because of his dementia, it was even harder to de-escalate him. As well, he became cachectic with very poor appetite and was taken to hospital 3 times resulting in doctors reporting that there was little that could be done for the ailing, suffering man other than to, "keep him comfortable." His son turned to cannabis medicine and developed a regimen of care for his father. The mainstay of treatment was CBD oil microdosed every 3 to 4 hours throughout the day with Indica tea for paranoia and anxiety, which helped to regulate his father's mood and behaviour during the day and improved his appetite; and at night CBD/THC oil 1 hour prior to a set bedtime of 9:00 p.m. with a tea made from a strain of cannabis with high levels of the terpene, myrcene. It took some time to arrive at the correct regimen, but the elderly veteran began to eat again, his physical strength improved, his mood was more regulated, his flashbacks and nightmares were finally controlled, and he slept through the night, allowing his caregiver son to also rest. His son reported, "My dad nearly died 3 times at the hospital and cannabis has saved his life...he has a much better quality of life now."

FUTURE RESEARCH

Given how dementia is a priority for the WHO, there has been a lack of clinical research in this field of study. There is a growing need for randomized placebo-controlled trials to investigate the relationship between cannabis and dementia, especially as laboratory research has suggested that cannabinoids could be used treat dementia.[12] The Alzheimer's Society research program does fund research into the study of endocannabinoids and how they can be used to treat Alzheimer's disease. As well, further research is needed to explore how well cannabinoids can manage the behavioural symptoms of dementia.[16,17] Replication of the smaller studies is also needed on a larger scale and for a greater period of observation to fully explore the relationship between cannabinoids and dementia.

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