



OPINION ARTICLE

Medical Cannabis in Neurology

Ovais Inamullah*

Vascular Neurology Fellow, Duke University Hospital, USA

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Opinion

Cannabis has been criminalized and ignored for centuries, but that is no longer possible, especially for medical professionals in neuroscience. Cannabis is changing the landscape of medical neuroscience. The plant has a variety of compounds with potential therapeutics and applications for medical neurology. New discoveries are happening constantly to find new ways cannabis can be used to help patients. Learning and researching more about Cannabis can provide us with new much needed tools to help patients with neurological disease.

The term Cannabis refers to a genus of plants that secrete organic compounds called cannabinoids that affect human physiology in different ways. The two main species are cannabis sativa and cannabis indica. Cannabis the plant has fingerlike projections on its buds called terpenes that secrete oils which contains the organic compounds that have medical potential. The main two compounds are cannabinoids THC and CBD. THC is the main psychoactive compound, the chemical that gets a person “high”. It is thought to work well for pain and could have antineoplastic effects. CBD, which is now legalized in most countries, is less psychoactive and known for its anti-inflammatory and antiepileptic effects.

Dr. Mechoulam of Israel started the first research on cannabinoids in the 1960’s, which led to the discovery of the endocannabinoid system. People have an endogenous endocannabinoid system that is comprised of endocannabinoids and our cannabinoid receptors. The main endocannabinoid is called Anandamide, and it binds to the cannabinoid receptors CB1 and CB2. CB1 is located throughout the central nervous system, and both receptors are found on peripheral nerves. The more we learn about this system, the more we discover that it is engrained in our nervous systems and diseases related to these systems. An imbalance of the endogenous endocannabinoid system is thought to contribute to many diseases in neurology including migraines, neuropathic pain, fibromyalgia, amyotrophic lateral sclerosis, and CNS tumors. In a field with so many unknowns, it is imperative that medical neurologists understand cannabinoids and the endocannabinoid system better. We owe it to our patients that are waiting for answers.

Refractory epilepsy has really allowed for medical cannabis to be pushed forward to an international conversation, because the benefits have become very apparent. The story about medical cannabis for epilepsy starts with one girl and one family, Charlotte Figi and her family. Before she was a year old, she had up to 250 seizures a day and was diagnosed with Dravet syndrome and had failed a long list of AEDs. The Stanley Brothers in Colorado provided the family with a high CBD variant of cannabis which helped her achieve a 90% reduction in seizures and dramatically improved her quality of life. This pushed for studies that showed for patients with Dravet Syndrome, patients using cannabis had a reduction in seizures of up to 70% [1]. Research was then directed at Lennox Gastaut Syndrome, another pediatric epilepsy condition that is very difficult to manage, and studies showed seizure frequency cut in half for these patients [2]. Epidiolex, the first FDA approved compound derived from the cannabis plant, was developed after these studies to be used in these two pediatric epilepsy conditions.

This success of medical cannabis in epilepsy has made many of us ask, how else can we use medical cannabis to help our patients? One area that has received a lot of attention is pain and reducing opiate usage. We as physicians know the difficulties with using opiate for managing pain conditions. Patients become dependent, develop tolerance, become combative, risk respiratory depression and overdose, and it creates a malignant relationship between providers and patients. Opiates are used even though we know it will only cause patients harm in the long term, and they are especially ineffective for patients with neuropathic pain.

Cannabis is the alternative we need for managing pain. With no overdose potential, cannabis has the potential to help many of our pain patients with much less risk. Cannabis has been

Correspondence to: Ovais Inamullah MD, Senior Assistant Resident, Duke University Neurology, USA. Email: ovais[DOT]inamullah[AT]duke[DOT]edu

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shown previously to work well for neuropathic pain, especially in HIV patients [3]. Other studies have showed that Cannabis can disrupt connections between the anterior cingulate cortex and the somatosensory cortex, which leads to reduction in pain sensation for patients with neuropathic pain [4]. Cannabis has also been shown to be effective in fibromyalgia, headaches and chronic pain syndromes [5-7].

The most important reason, however, that we need to use cannabis for pain patients is that it decreases opiate use. Prior studies have shown decreases of opioid use of up to 64% with the use of medical cannabis with a significant improvement in quality of life [8]. The trends of decreasing opiate overdose mortality in states that have legalized cannabis is particularly compelling. States like Colorado and Washington have seen deaths from opiate overdose decrease dramatically since legalizing cannabis, and studies have shown that there is a statistically significant relationship between legalizing cannabis and decreasing opiate overdose [9]. That means everyday cannabis is not legalized means more of our patients dying from overdose on opiate medications.

It is time to end the prohibition and stigmatization of cannabis. Neurologists need to become familiar with the endocannabinoid system just like they are with our dopaminergic system or other systems related to neuroscience. The potential for new medical treatments to help our patients is endless. In addition to epilepsy and pain, there have been studies showing efficacy of cannabis in and many areas including stiffness and spasticity [10], bladder dysfunction, nausea, dementia, mood disorders, PTSD, stroke, movement disorders, anorexia and appetite, and CNS tumors. The evidence compels medical neuroscience to study cannabis more thoroughly; there may be other therapeutic applications or risks we are unaware of so far. Remaining ignorant of the medical uses of cannabis is no longer an option.

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