Introduction

One of the evolving trends in America is the use of the commonly recognized recreational drug, marijuana, for medicinal reasons. Marijuana for both recreational and medicinal purposes is illegal in many states although this is changing rapidly across the country. This poster will examine the evidence as to whether the use of medical marijuana affects outcomes in traumatic brain injury. This poster will also share the current state of legalizing marijuana for medicinal use in the State of Pennsylvania. This poster author does not advocate for a change in marijuana laws but means to examine this issue in relation to traumatic brain injury.

Background

Marijuana is the dried leaves, flowers, stems, seeds from the hemp plant cannabis sativa. Marijuana is composed of over one hundred cannabinoids. These cannabinoids are the active chemical structures of the plant genus cannabis. Delta 9 tetrahydrocannabinol or THC, as it is more commonly called is the most psychoactive component of the marijuana plant and changes brain consciousness and alters moods. Historically cannabis for medicinal purposes has been used for centuries in China and the Middle East and brought to Western medicine in the 1940s. In the US in 1937 the federal government began restricting and taxing its use over the objections of the American Medical Association (AMA). It was deemed a narcotic and classified in 1970 as a schedule 1 drug similar to how heroin is classified. (Michael Schatman, Feb 6,2015, http://www.medscape.com/viewarticle/83915, print)

Cannabinol and cannabidiol and cannabichromene (all cannabinoids) are all components of the marijuana plant that have biologic actions such as pain relieving and anti-inflammatory properties without the high or psychoactivity of THC. Cannabinoids activate specific receptors site in the brain areas where the following functions occur: coordination, movement, concentration, sensory and time perception, memory, pleasure center occurs.

Benefits of Medical Cannabis:

- Assists in pain relief (cancer studies)
- Well tolerated
- No physical addiction

Concerns of Use for Medical Cannabis:

- Can cause confusion
- Drowsiness
- Disorganized thought
- Agitation
- Impair balance

Examing the Research

There is limited evidence examining the effects of marijuana on traumatic brain injury. Some research with animal models has shown promise in cannabinoid analogs to be neuroprotective after trauma by reducing glutamate excitotoxicity, free radical damage and inflammatory response. (Nguyen, p. 979) This secondary cascade of toxic ions mostly calcium have a detrimental insult to the brain after the primary traumatic injury. "Other animal studies have shown decreased vaso spasms and inhibition of tumor necrosis factor, all associated with neuroprotection." (Nguyen, p.979).

Strains

One aspect of this topic to remember which also confounds outcomes research is that recreational strains are different than the medical strains. Medical marijuana is lower in THC (the psychoactive component) and higher in compounds that assist in decreasing pain and inflammation.

State of Pennsylvania and Medical Marijuana

The first US medical cannabis law came from California Compassionate Use Act of 1996 which recommended marijuana for cancer, anorexia, chronic pain, glaucoma, arthritis, spasticity, AIDS and any other illness for which marijuana provides relief of symptoms. (M Schatman)

On May 12, 2015 The Pennsylvania Senate passed a bill allowing medical marijuana to be prescribed for cancer, chronic pain, epilepsy and other documented medical conditions such as HIV/AIDS, Crohn’s disease, diabetes and glaucoma. This bill would allow the marijuana to be given by nurses and doctors and patients themselves via vaporizer, ingestible oil, topical ointment or nebulizer not via smoking marijuana. It now goes to the Pennsylvania House Committee for review. (retrieved www.phillynews.com 5/13/15). If this does get passed in the Pennsylvania House it would join twenty three other states that have medical marijuana bills in place. If it does go through the Department of Health would regulate it by creating a state registry of those receiving it, track licensed distributors, and licensed growers in Pennsylvania.

Conclusion

The research is building as to if and how medical marijuana affects outcomes in the treatment of traumatic brain injury. There is a lack of substantive research as this topic is evolving. Because this is still evolving, the answer is not definitively determined as to its benefits yet for brain injured patients. From what I have researched, marijuana seems to have some neurological protective quality by decreasing an inflammatory process at the injury area. More research is need with randomized control studies. There are many variables such as timing, cannabinoid analogs, patient morbidities, strength of dose, that are confounding in proving benefits of this treatment. As research mounts possibly this maybe an effective treatment eventually for brain injured patients.

References