

Are today's cannabinoids therapeutic for glaucoma?

by Maxine Lipner EyeWorld Senior Contributing Writer

Considering marijuana use for glaucoma

For years there's been talk about the use of marijuana to lower IOP. With many states passing legislation legalizing use for medicinal purposes and beyond, it's time to consider if medical marijuana is something that has a place in the glaucoma armamentarium.

With marijuana there is indeed some intraocular pressure reduction, according to **Henry D. Jampel, MD**, Odd Fellows professor of ophthalmology, Johns Hopkins University School of Medicine, Baltimore. "The literature suggests about a 25% reduction in most patients," Dr. Jampel said. "This would be comparable to some of our currently used second-line eye drops, but not as good as the prostaglandin eye drops that serve as our first line."

Beyond lowering pressure

Dr. Jampel does not view marijuana as a remedy for glaucoma. "At this time, there is no role for marijuana in the treatment of glaucoma," he said. He added that although marijuana has been shown to lower IOP, thereby possibly reducing the amount of optic nerve damage resulting from the level of IOP, that's not the end of the story. "Marijuana might also have some undesirable effects on the optic nerve," he said.

Why is there often an undercurrent to use marijuana despite other available medications? Dr. Jampel attributes it to some people's view of the drug. "I think it's mainly the coolness factor," he said. In addition to marijuana not being particularly robust at lowering pressure, it also brings with it some significant side effects much greater than traditional medications, Dr. Jampel thinks. "Marijuana's side effect profile is much worse than what we are currently using," he said. "All forms of marijuana alter mental status and level of consciousness; in addition, smoking marijuana is bad for the lungs."

Marijuana's effects are also very short-lived, Dr. Jampel pointed out. It would have to be taken by patients at least 4 times a day.

What's more, with the amount of marijuana that would be needed



to control IOP, the drug's mind-altering effects must be considered. Dr. Jampel thinks this is particularly concerning for some segments of the population. "In adolescents, heavy marijuana use can permanently alter the brain, but this may not be an issue in adult glaucoma patients," he said. However, the day-to-day alteration in mental state is a significant concern. Also important to consider here is the interaction that marijuana can have with other prescription and non-prescription medication that the patient may be using, Dr. Jampel said.

Even if marijuana was taken by means other than smoking, such as ingestion, it would still not make it an attractive treatment for glaucoma, he said. "Ingesting this gets rid of the pulmonary side effects, but the effects on the mind, its short duration of action, and its modest effectiveness still remain," Dr. Jampel said.

Economic considerations

From an economic perspective, use of marijuana as a glaucoma treatment may be of concern. In a forthcoming article examining the use of cannabinoids as glaucoma therapy, Gary D. Novack, PhD, PharmaLogic Development, San Rafael, Calif., took a hard look at the costs. Dr.

Novack estimated that it would cost about \$8,280 each year for a patient to use marijuana as a treatment for glaucoma. Using the web cannabis distribution site Organicann.com, he determined that the approximate cost for 1 gram of marijuana is about \$15. With one marijuana cigarette requiring 0.5 grams and approximately 3 cigarettes needed for the requisite effect, Dr. Novack estimated that it would cost about \$23 a day. He said that medical use of cannabinoids is probably not covered under most insurance plans. Dr. Novack acknowledged that these estimates have their limitations. In his review, Dr. Novack said that there is no new published controlled data on cannabinoids and glaucoma, although several firms announced development of cannabinoids for various potential indications. Further, he advised that irrespective of the challenging therapeutics of delta-9-tetrahydrocannabinol (THC, the main ingredient in marijuana) for glaucoma, in today's environment patients may be using medical marijuana. Thus, the ophthalmologist needs to be aware of this potential self-medication by patients.

Dr. Jampel doesn't see marijuana becoming a therapeutic option for glaucoma anytime soon. "I don't envision offering marijuana

to my patients any time in the near future," he said, adding that the side effects and frequency that this would need to be taken are unacceptable.

Going forward, Dr. Jampel is hopeful that the intraocular pressure-lowering property that marijuana has to offer can be harnessed through the development of other medications without marijuana's drawbacks. "Our brains have their own internal system, known as the endocannabinoid system, through which marijuana may exert its intraocular pressure-lowering effect," he said. "Hopefully, drugs can be developed that specifically interact with our own internal system to lower intraocular pressure when needed." **EW**

Reference

Novack GD. Medicinal cannabis for glaucoma. *Curr Opin Ophthalmology*. Article in press.

Editors' note: Dr. Jampel has financial interests with Allergan (Dublin). Dr. Novack has no financial interests related to this article.

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ESCRS

10–14 September

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Bella Center, Denmark



Abstract Submission Deadline
15 March 2016

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