

Marijuana and Glaucoma

By Emily Jones, M.D.

Imagine you are a glaucoma specialist, working your way through your morning glaucoma clinic, concluding another routine appointment with a patient. He's doing well: his eye pressure is under good control, he is tolerating his eye drops and using them regularly, his visual field is full. You are about to say good-bye, when he mentions he has one last question for you. He hesitates, looks at you uncertainly, then says, "What do you think about medical marijuana for my glaucoma?"

The short answer is, marijuana is simply not a great medication for glaucoma. However, we all know that this inquiry is mired in social and political complexities. Medically speaking, the eye drops ophthalmologists prescribe to lower eye pressure work better, last longer, and have fewer side effects than botanical marijuana. For a more comprehensive answer, let's take a step back.

First, what is marijuana? The primary psychoactive compound in marijuana is delta-9-tetrahydrocannabinoid, or THC. THC content in marijuana products can be highly variable. In 1980, average THC content in marijuana plants was 2%. It was up to 5% in 1992, and 8.5% in 2006. The majority of users smoke marijuana, rather than taking it incorporated into foods like brownies, and most people experience a high characterized by mild euphoria, relaxation, and altered perception. A few experience unpleasant effects, including anxiety or paranoia.

The mechanism by which marijuana works on the mind and body is incompletely understood (at least in part due to restrictions on use of federal funding to study marijuana) but involves activation of the endocannabinoid system. Receptors for this system are found ubiquitously throughout the body, from the central nervous system, to the reproductive organs, to the digestive tract. In the eye, inhaled marijuana drops intraocular pressures by 25%, an effect lasting three to four hours. However, only 60-65% of users will respond to marijuana this way.

How common is marijuana use? By all estimates, it is very common. In the 1980s, an estimated 2/3 of young adults had used marijuana at some point. A 2010 poll of Californians revealed 47% of them had smoked marijuana at least once. In 2012, more teens said they had smoked marijuana than cigarettes. Sixteen states allow medical use of marijuana. Recreational use of marijuana has been progressively gaining cultural acceptance, and two states, Washington and Colorado, recently passed laws legalizing recreational use.

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Why is marijuana so controversial? For much of history, it was not. From the mid-1800s through the 1930s, American physicians prescribed marijuana for headaches, anorexia, insomnia and sexual dysfunction, and its documented use by humans goes back at least four thousand years. In the 1930s, popular media turned against marijuana, and propagandist films and advertisements warned that marijuana use would lead to insanity and societal mayhem. In 1942, marijuana was removed from the US Dispensatory, and in 1970, the FDA decided it had no medicinal value and categorized it as a Schedule 1 drug. This categorization, generally reserved for dangerous and highly addictive substances, led to the virtual cessation of research on cannabis in the U.S. as well as strict criminal penalties for marijuana users.

Is marijuana harmful? It can be. Marijuana cigarettes contain many different chemicals, not just THC. The average joint contains what has been called a “complex chemical slush” composed of more than 400 chemicals from 18 different chemical families. In the short term, cannabis itself causes increased heart rate, blood vessel dilation, decreased blood pressure, and dizziness. People who smoke joints, or marijuana cigarettes, expose themselves to asthma, bronchitis, emphysema, and lung cancer. Addiction to marijuana is possible, but uncommon, occurring in approximately 9% of users, though it may be as high as 16% for users who start in their early teens. (Comparative rates of dependency are 15% for alcohol, 32% for nicotine, and 17% for cocaine.) A small but growing body of evidence links the use of marijuana to the exacerbation or induction of psychosis in predisposed patients. In addition, convincing evidence shows that marijuana use by teens and pre-teens is tied to harmful disruptions in brain development.

What does the future hold for medical marijuana? Many researchers have high hopes for marijuana as a useful drug in the future. Painkillers, muscle relaxants, immunosuppressants, anti-inflammatories, appetite stimulants, anti-nausea medicines, bronchodilators, seizure medications, anticancer therapies, and allergy medicines are all possible products that could be developed from THC.. Researchers are working on ways to isolate molecules from the active THC compound in order to harness useful biologic actions while avoiding harmful side effects. Ideally, the medical marijuana of the future would be cannabinoids delivered in pill form, giving patients the intended medical benefit without the risks of lung damage, psychological side effects, or risk of addiction.

So do you, the glaucoma specialist, offer medical marijuana to your patient? Not today. The American Glaucoma Society and the American Academy of Ophthalmology both have position statements advocating against marijuana as a glaucoma treatment. Happily, you have a variety of glaucoma medications to offer, medications that are effective and well-tolerated and that have an excellent chance of effectively controlling your patient’s glaucoma and preserving his vision for years to come.