Cannabis Toxicity

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It is important that providers are familiar with the causes, signs, and treatment of cannabis toxicity given the higher concentration of Δ9-tetrahydrocannabinol (THC) in many newer cannabis plants and the wide availability of cannabis in Los Angeles County. In addition, providers should be prepared to counsel patients about prevention.

Cannabis toxicity ranges from benign reactions to severe symptoms requiring hospitalization and is influenced by dose and patient factors, among others. Children are at highest risk of cannabis poisoning due to their risk for accidental ingestion. Preventing cannabis toxicity generally involves avoiding excessive or unintentional cannabis consumption. The supplement, “Pregnant and Breastfeeding Women and Cannabis” discusses the prevention of perinatal cannabis exposure.

Understanding Causes of Cannabis Toxicity

Cannabis plant breeding and cultivation has changed in recent decades. Many plants now contain higher amounts of THC, leading to stronger effects on the brain.\(^1,2,3\) Newer methods of consuming cannabis, such as dabbing, vaping, and consuming edibles, may also lead to consumption of higher THC doses.

Among cannabis products, edibles are a common cause of cannabis poisoning, particularly for children and youth who may confuse them for regular food or candy. After legalization, poison control centers experienced an increase in cannabis-related calls (with a high percentage of cannabis exposures being via edibles), particularly involving children ages 0 through 9 years of age.\(^4,5\)

California regulations limit the amount of THC contained in edible products sold by licensed dispensaries. Edibles products may not exceed 10 mg of THC per serving and may not exceed 100 mg of THC per package.\(^6\) However, homemade and black-market edibles may still contain multiple servings of THC. In addition, the physiologic effects from oral consumption are slower in onset and longer in duration compared to inhalation.\(^7\) As a result, patients might ingest more cannabis and be affected more strongly and for longer than intended.

Other cannabis products may also increase the risk for toxicity. For example, tinctures, capsules, and topical are limited by California regulations to a maximum of 1,000 mg of THC per package for non-medicinal use and 2,000 mg per package for medicinal use.\(^8\) As a result of these higher THC doses, toxicity with these cannabis products has become a greater concern.

Chemicals and adulterants, particularly in black-market cannabis products, may also be toxic.\(^8\) Cannabis users are often unaware of the presence of these chemicals, which may only be identified if the user has a toxicological evaluation as part of a forensic investigation, such as after being arrested for driving while under the influence.\(^9\)

Recognizing and Treating Cannabis Toxicity

Individual reactions to cannabis vary and are influenced by method of use; cannabis potency; patient age and gender; the presence of other psychoactive substances; and tolerance to cannabis or other drugs. Mixing cannabis with other psychoactive substances, including alcohol, can lead to higher levels of intoxication than use of either substance alone and increases the risk of toxicity.

Commonly encountered signs and symptoms of cannabis toxicity in adults include: paranoia, psychosis; and decreased judgment, perception, and coordination.\(^10\)

Importantly, synthetic cannabinoids (aka: Spice, K2) are commonly confused for cannabis, but are distinctly different. Despite their name, synthetic cannabinoids are often not cannabinoids at all, present with very different toxicity symptoms, and are significantly more dangerous, with potentially life-threatening consequences. It is important that healthcare providers are aware of the risk and distinct presentation of synthetic cannabinoids. For more information, read the
California Poison Control’s overview of Synthetic Cannabinoids.

Treatment of cannabis toxicity/overdose is supportive and based on serial reassessment of the airway and neurological signs. Of note, despite cannabis’ established anti-emetic properties, there is increasing evidence of its paradoxical effects on the gastrointestinal and central nervous systems. Emergency departments have reported a recent increase in the number of patients presenting with symptoms associated with Cannabinoid Hyperemesis Syndrome. This relatively new and under recognized condition is typically associated with chronic cannabis use and characterized by cyclic episodes of nausea and vomiting. Patients often report frequent hot bathing, which appears to ameliorate symptoms, though the mechanism for this is unclear. The hyperemesis typically lasts for 24 to 48 hours, and treatment involves supportive therapy with fluid resuscitation and anti-emetic medications. For additional information, read the Cannabinoid Hyperemesis Syndrome article.

Preventing Cannabis Toxicity and Related Consequences

Patients who choose to use cannabis, particularly for the first time, should be advised to start with less than a single dose and wait several hours before consuming more, particularly when using edibles. Patients should also be counseled on the risks of cannabis to children and infants, and to avoid cannabis exposure via secondhand smoke. Notably, pregnant and lactating women and those contemplating pregnancy should be advised to avoid cannabis.

Contaminants are a concern and patients who elect to use cannabis products should be counseled that purchasing products only from licensed dispensaries may help to reduce risks associated with potency and contamination. Encourage patients to read the DPH Marijuana Edibles fact sheet to learn about edibles and their safer consumption.

Given the significant risks of unintentional ingestion by children, patients also should be counseled about proper labeling and home storage of cannabis products. Cannabis should be stored in child-resistant containers out of the view and reach of children. California law requires cannabis products to be in child-resistant packaging and dispensaries to place edible cannabis purchase(s) in an opaque bag before leaving the store. The bag must be re-sealable if it contains multiple servings. See the Packaging FAQs webpage for additional information. Lastly, patients should be advised to program the California Poison Control Hotline number (800-222-1222) into their phones so that it is readily available in the event of unintentional ingestion and/or cannabis overdose.

For a summary of key patient counseling points with links to more detailed information and resources, see “Cannabis Counseling Points and Resources.”

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References