Cannabis Intoxication Case Series: The Dangers of Edibles Containing Tetrahydrocannabinol

Kathy T. Vo, MD*; Howard Horng, PhD; Kai Li, MD; Raymond Y. Ho, PharmD; Alan H. B. Wu, PhD; Kara L. Lynch, PhD; Craig G. Smollin, MD

*Corresponding Author. E-mail: kathy.vo@ucsf.edu.

Study objective: Cannabis and its principal active constituent, Δ9-tetrahydrocannabinol (THC), are increasingly available as edibles resembling commercially available food products. In this case series, we describe a population of predominantly pediatric patients who were inadvertently exposed to a THC-containing product in San Francisco.

Methods: Twelve children and 9 adults were identified, with 16 patients having detectable serum THC and THC metabolites. All patients presented to hospitals with a variety of constitutional symptoms and all were discharged home within 12 hours.

Results: In general, pediatric patients had more severe symptoms and longer hospital length of stay, and, uniquely, a majority presented with leukocytosis and elevated lactic acid levels.

Conclusion: We recommend that efforts be made to increase general public awareness in regard to the potential hazards of THC-containing edibles resembling commercially available food products. [Ann Emerg Med. 2018;71:306-313.]

Please see page 307 for the Editor’s Capsule Summary of this article.

INTRODUCTION

The increasing availability of marijuana edibles, including hemp oil, candy, popcorn, and beverages, has been associated with increased emergency department (ED) visits and an increase in the call volume to poison control centers for unintentional pediatric marijuana exposures.1,2 Although cannabis remains a schedule I substance under US federal law, public support for cannabis reform is increasing.

In the United States, as of November 8, 2016, 28 states and the District of Columbia had laws legalizing cannabis in some form.3 High doses of cannabis can be associated with undesired effects such as paranoia, psychotic-like symptoms, and panic attacks, depending on the content of its principal active constituent, Δ9-tetrahydrocannabinol (THC), and that of cannabidiol, a constituent with antianxiolytic properties.4 Higher concentrations of THC relative to cannabidiol, as demonstrated in many commercial products, are associated with increased incidence of psychotomimetic symptoms.5-6 Various studies in adults with acute THC exposure have shown a dose-related reduction in performance at laboratory tasks measuring memory, divided and sustained attention, reaction time, and tracking and motor function.4,7-10 Less is known in regard to the acute effects of THC in the pediatric population, and much of the data that currently exist involve retrospective reviews of large, coded data sets.11-13

We describe the clinical presentations and corresponding serum levels of THC and its primary metabolite after the unintentional ingestion of a marijuana edible that resembled candy. This single exposure resulted in a total of 21 patients who presented to EDs (12 children and 9 adults), including 5 pediatric inpatient admissions, as well as the activation of a mass-casualty response from a major metropolitan emergency response system.

MATERIALS AND METHODS

Selection of Participants

First responders were called to an event center hosting a child’s birthday party, during which multiple attendees complained of a variety of symptoms, including dizziness, nausea, vomiting, lethargy, hallucinations, and palpitations. The symptoms were thought to be related to the ingestion of gummy candies approximately 1 hour before. Given the large number of persons affected, the emergency was deemed a mass-casualty incident and surrounding hospitals were immediately alerted. Simple triage and rapid
Editor’s Capsule Summary

What is already known on this topic
Edible cannabis products are emerging as a concern for acute toxicity, particularly in children.

What question this study addressed
The authors describe a small mass-casualty event caused by the surreptitious supplying of gummy candy containing Δ9-tetrahydrocannabinol (THC) at a child’s birthday party.

What this study adds to our knowledge
A total of 21 people (12 children and 9 adults) presented, leading to a mass-casualty activation. All patients had central nervous system effects (hallucinations, confusion, and dizziness). Tachycardia and hypertension were common. Most children had leukocytosis and elevated lactic acid levels. In the pediatric patients, THC concentrations ranged from 17.9 to 106 ng/mL and 11-nor-9-carboxy-THC concentrations ranged from 10.9 to 195 ng/mL.

How this is relevant to clinical practice
Surreptitious THC exposure should be considered in children with altered mental status. Signs of toxicity in children may be different than previously reported.

Because we had direct access to patients’ hospital charts, poison control center charts were not reviewed. Serum samples from patients and samples of the confiscated gummy candies were provided to the clinical laboratory staff at Zuckerberg San Francisco General Hospital and Trauma Center. Serum quantification of THC and its principal metabolite, 11-nor-9-carboxy-Δ9-THC (THC-COOH), was performed by liquid chromatography-high-resolution mass spectrometry by a previously described method. These results were not available to physicians during patients’ hospital courses and therefore were not part of the clinical assessment and decisionmaking. In addition, a sample of the gummy candy was obtained and tested for THC concentration.

This study was granted exemption from review by the University of California, San Francisco Committee on Human Research.

RESULTS

Table 1 summarizes the age, sex, clinical characteristics, laboratory abnormalities, disposition, and length of stay of all patients involved in the outbreak. A total of 21 patients were treated at 6 San Francisco hospitals. Patients were aged 6 to 60 years. Twelve were pediatric patients younger than 18 years, and 11 were male patients. All were Hispanic and were attendees of the event. Sixteen patients were evaluated, observed, and discharged home from an ED. Two patients were admitted to a medical ward, and 3 were admitted to an ICU. Length of stay ranged from 1.5 to 8 hours in the ED and 9 to 12 hours in the medical ward. All 3 ICU patients were discharged after a stay of 12 hours, and there were no deaths.

Table 2 details patient complaints and physical examination objective findings at presentation for both pediatric and adult patients. A majority of pediatric patients presented with abnormal visual symptoms (58%), followed by complaints of dizziness (50%) and lethargy (50%). In these patients, tachycardia, defined as a pulse rate greater than 100 beats/min, was the most common vital sign abnormality (83%; range 102 to 181 beats/min). This was followed by hypertension (66%; range 127 to 157 mm Hg), defined as a systolic blood pressure greater than 120 mm Hg, and tachypnea with a respiratory rate greater than 20 breaths/min (50%; range 22 to 30 breaths/min). Two of the 3 pediatric patients with measured serum THC-COOH metabolite values greater than 100 ng/mL were admitted as inpatients for monitoring. Dizziness was the predominant complaint in adults (67%), and fewer adults had vital sign abnormalities than did children. No adult patients were admitted to the hospital, and adults had a
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات