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Selected Topics: Toxicology

UNINTENTIONAL MARIJUANA EXPOSURE PRESENTING AS ALTERED MENTAL STATUS IN THE PEDIATRIC EMERGENCY DEPARTMENT: A CASE SERIES

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□ **Abstract—Background: Unintentional tetrahydrocannabinol (THC) exposure in pediatric patients can present as altered mental status. Altered mental status in a pediatric patient often leads to invasive diagnostic testing. Case Report: The following cases describe 3 pediatric patients in Washington state who presented to a tertiary care children's hospital emergency department (ED) with altered mental status, later found to have urine toxicology screening positive for inactive THC metabolite (positive THC toxicology screen). Case 1 is a 6-year-old boy who presented with vomiting, lethargy, and hallucinations. Case 2 is a 5-year-old girl who presented with nausea, slurred speech, ataxia, and lethargy in the setting of a minor head injury. Case 3 is a 7-month-old boy who presented with vomiting and lethargy in the setting of a minor fall the day prior to ED evaluation. All children had extensive work-ups before the diagnosis was made; 2 were discharged home and 1 was admitted to the pediatric intensive care unit. Why Should an Emergency Physician Be Aware of This?: As access to marijuana increases with growing legalization, it is important to be familiar with state marijuana legislation, to consider and ask families about access to marijuana products as a potential contributor to altered mental status, and to be aware of potential caretaker reluctance regarding disclosure of marijuana use secondary to perceived stigma. Maintaining awareness of the clinical effects of THC exposure in children may limit invasive testing in a hemodynamically stable child with altered mental status.** © 2017 Elsevier Inc. All rights reserved.

□ **Keywords—poisoning; intoxication; ataxia; marijuana; THC; pediatrics; lethargy**

INTRODUCTION

Clinical recognition of altered mental status potentiated by marijuana or tetrahydrocannabinol (THC) exposure can be challenging in pediatric patients. However, increased awareness regarding the clinical effects of THC exposure in children, as well as routine utilization of toxicology screening in the initial work-up of altered mental status, may facilitate earlier diagnosis, limit extensive diagnostic imaging or laboratory evaluation, and facilitate implementation of preventative measures. Children who live in states where recreational marijuana is legal or medical marijuana is decriminalized may be at increased risk of unintentional exposure to marijuana or THC-containing products (1,2). Regulation of medical and recreational marijuana products vary from state to state, so a review of unintentional marijuana exposures in children after state legalization is warranted to determine the incidence, clinical effects, and types (medical vs. recreational marijuana) of unintentional exposures.

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CASE REPORTS

Case 1

A 6-year-old previously healthy fully vaccinated boy presented to the Emergency Department (ED) with an acute onset of vomiting followed by lethargy. The patient's father stated that the patient consumed a large amount of snacks while in the car, then complained of abdominal pain and had an episode of nonbloody, nonbilious emesis. The father noted that the patient then became pale, lethargic, and developed auditory and visual hallucinations. Paramedics were called. The patient had been in his usual state of health prior to this event, with no known history of ingestion, fever, illness, travel, sick contacts, or trauma. The patient had no past medical history concerning for neurologic or psychiatric issues. Upon arrival in the ED, about 2 h after initial symptoms, the patient's vital signs were within normal limits, with a normal respiratory effort. There was no evidence of trauma on physical examination and the patient had a soft, nontender, nondistended abdomen. The examination was notable for confusion, speaking "gibberish," and dilatated, sluggishly reactive pupils. The patient reported dizziness and auditory/visual hallucinations. A noncontrast head computed tomography (CT) scan was obtained and normal. Electrocardiogram (ECG) was obtained in the setting of altered mental status with concern for ingestion and was read as "borderline left ventricular hypertrophy without evidence of dysrhythmia." The ECG was reviewed by Cardiology and this was thought to be an incidental finding unrelated to the patient's current condition. Electrolytes and venous blood gas were within normal limits. Serum acetaminophen, salicylate, acetone, ethanol, isopropanol, and methanol levels were negative. Two urine drug screens–one done in-house by immunochromatographic assay (MEDTOXScan; MEDTOX Diagnostics Inc., Burlington, NC) as part of a limited urine drug screen (UDS), and a second, done as part of a send-out comprehensive drug screen (Beckman Coulter EMIT immunoassay; Beckman Coulter, Inc., Brea, CA) – were positive for THC (>50 ng/mL 11-nor-9-carboxy-Δ^9-THC). The patient's mental status and physical examination normalized after 4 h and the patient was able to tolerate oral hydration. Upon further questioning, the patient revealed that he had eaten part of a cookie he had found in his mother's bag in the car. The mother relayed that these were recreational marijuana cookies she had received as a gift. THC content of these cookies was unknown. The patient was observed in the ED for 5 h and discharged home after social work (SW) evaluation was done and Child Protective Services (CPS) referral was placed.

Case 2

A 5-year-old previously healthy, fully vaccinated girl was referred to the ED by her pediatrician, with history of nausea, slurred speech, somnolence, and abnormal gait in the setting of an unwitnessed head injury reported by parents. The patient's mother stated the patient had been jumping on a bean bag and hit the back of her head on a wall. The event was unwitnessed, but there was no parental concern for loss of consciousness. A 0.5-cm linear occipital head laceration was repaired with skin adhesive by her pediatrician before she was referred to the ED. The patient had been in her usual state of health prior to this event, with no known history of fever, illness, travel, or sick contacts. Parents were not directly asked about potential ingestions in the ED. The patient had no past medical history concerning for neurologic or psychiatric issues. Upon arrival in the ED, the patient was alert and oriented. Initial vital signs included a heart rate of 102 beats/min, blood pressure of 106/56 mm Hg, and respiratory rate of 22 breaths/min. Her initial physical examination was notable for mild ataxia with walking and a repaired scalp laceration. The remainder of her neurologic examination was normal. Her abdomen was soft, nontender, and nondistended. During the first few hours of her ED course, the patient became progressively sleepier, with persistent ataxia, and was unable to walk without support. A noncontrast head CT scan was obtained and was normal. Electrolytes and a complete blood count were within normal limits. Glucose level was not checked. Neurology evaluated the patient and determined that she likely had ataxia and somnolence secondary to a mild traumatic brain injury. They recommended inpatient monitoring of neurologic status, no further imaging, and follow-up on any outstanding serum laboratory testing. After approximately 6 h of observation in the ED, due to concern for traumatic brain injury, the patient was admitted to the Pediatric Intensive Care Unit (PICU) for ongoing neurologic evaluation and close observation given persistent sleepiness. PICU planned to consult Neurosurgery for further recommendations given the degree of somnolence and altered mental status in the setting of a relatively minor head injury. Both limited and comprehensive urine drug screens were sent while the patient was in the ED, and were pending at the time of admission to the PICU. The patient received hourly neuro checks in the PICU and intravenous maintenance hydration. She did not require supplemental respiratory support. During the PICU stay, both limited and comprehensive UDS resulted in a positive THC toxicology screen. Upon further questioning, the patient revealed that she had a "small nibble" of chocolate at home. The mother subsequently stated that there were THC-containing medical marijuana chocolate edibles in her