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Case Report

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A candy catastrophe: case report on methamphetamine poisoning in a child

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Abstract

Methamphetamine, a potent amphetamine derivative, is increasingly implicated in pediatric poisonings and can present with severe neurological, cardiovascular, or behavioural disturbances. Clinicians must remain vigilant when managing undifferentiated status epilepticus, as toxic etiologies may masquerade as primary medical causes. A previously healthy 3-year-old boy was found convulsing at home and received rectal diazepam without improvement. On arrival at the emergency department, he exhibited generalised tonic-clonic seizures, tachycardia, and dilated pupils despite intravenous benzodiazepines and levetiracetam. Suspicion arose when inconsistent caregiver accounts and mention of "candy" ingestion led the team to perform toxicology screening, which revealed methamphetamine as the offending agent. The child required endotracheal intubation and continuous midazolam infusion to control his refractory seizures. Subsequent investigations showed lactic acidosis but no intracranial pathology. Both parents later admitted to methamphetamine use prompting urgent child-protection involvement. The boy was successfully extubated after two days, recovered without neurological deficits, and was discharged on hospital day eight. This case underscores the importance of maintaining a high index of suspicion for toxic etiologies in unexplained pediatric seizures. Early recognition, prompt seizure management, and vigilant social assessment are critical to achieving favourable outcomes and ensuring child safety.

Keywords: methamphetamine poisoning ; methamphetamine toxicity ; methamphetamine induced seizure ;child neglect ; child abuse

1. Introduction

Methamphetamine is the second most widely used illicit drug worldwide after cannabis(1). A synthetic derivative of amphetamine, methamphetamine exerts powerful sympathomimetic effects by enhancing the release of dopamine, norepinephrine, and serotonin. Oral ingestion of methamphetamine typically leads to symptom onset within about 20 minutes, with peak plasma concentrations reached in two to three hours and a half-life of approximately 10 hours(2).

Commonly known on the street as "ice" or "crystal," methamphetamine is popular among recreational users for its capacity to elevate mood and induce euphoria. Typical sympathomimetic effects include tachycardia, hypertension, hyperthermia, agitation, arrhythmias, and, less commonly, seizures. There is no specific antidote for methamphetamine toxicity; therefore, care is primarily supportive.

Globally, there have been increasing reports of pediatric methamphetamine poisoning, with methamphetamine identified as a frequent cause of illicit drug-related pediatric admissions in certain regions like the United States. In Malaysia, childhood poisoning is a significant public health issue, affecting children aged 0 to 5 years in 63% of overall reported incidents; of these, 96.7% are believed to be unintentional(3). However, local data specifically regarding methamphetamine poisoning in children remains scarce.

The effects of methamphetamine on the pediatric population are only partially understood, given the limited number of case reports and studies. Many management strategies were adapted from anecdotal experiences with adult patients, while others relied more on a theoretical understanding of the pathophysiology instead of robust evidence. In this report, we present a rare case of status epilepticus in a 3-year-old child following accidental methamphetamine ingestion, which was successfully managed, leading to a favourable outcome.

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2. Case description

A previously healthy 3-year-old boy was brought to the Emergency Department (ED) after being discovered convulsing on the bathroom floor by his father. Initially, the father sought care at a private clinic, where the child received rectal diazepam. Because the seizure persisted, he was urgently transferred to our hospital via ambulance. On arrival to the emergency department, the child was having generalised tonic-clonic movement of bilateral upper and lower limbs with up rolling of eyes. He was tachycardic with a heart rate of 174 beats/min with a bounding pulse, blood pressure of 79/52mmHg, oxygen saturation of 98% on high flow oxygen and capillary glucose level of 8.2mmol/L upon arrival. The pupils were dilated bilaterally. Initial pharmacotherapy included intravenous (IV) diazepam (total of 4 mg) followed by IV midazolam (0.2 mg/kg once, then 0.1 mg/kg twice). Because the seizures continued, second-line therapy with IV levetiracetam was administered. As the patient was in status epilepticus, the patient was intubated for airway protection. Post-intubation, there were still persistent tonic-clonic movements, for which continuous midazolam infusion finally controlled the seizure.

Subsequent examination revealed hyperreflexia in both upper and lower limbs but no clonus. The child was afebrile and showed no signs of meningismus, as both Kernig's and Brudzinski's signs were negative. Cardiovascular and respiratory examinations were unremarkable, with no bruises, wounds, or bite marks observed. Point-of-care blood gases revealed lactic acidosis (pH 7.08, pCO_2 65 mmHg, HCO_3 19.3 mmol/L, lactate 7.5 mmol/L, base excess –11.3). An electrocardiogram demonstrated sinus tachycardia.

Further history disclosed that the child's older brother had witnessed him climbing up to an unlocked medicine cabinet shortly before the event, where he had allegedly eaten some "candy." This detail raised the suspicion of possible accidental poisoning, prompting a urine toxicology screening that tested positive for methamphetamine. A non-contrast computed tomography (CT) scan of the brain showed no evidence of haemorrhage or ischemic changes.

The child was admitted to the Intensive Care Unit (ICU) and remained intubated for two days. After extubation, he was weaned off oxygen and transferred to the general pediatric ward. He was discharged after an 8-day hospital stay without apparent neurological deficit.

Upon further investigation, both parents admitted to being methamphetamine users, though they claimed the "medicine cabinet" was typically locked. They stated they had forgotten to lock it after their last methamphetamine consumption. Given the high suspicion of child neglect, the hospital's Suspected Child Abuse and Neglect (SCAN) team was activated. The father was subsequently charged with child neglect and incarcerated, and the mother lost custody of both children. The boy and his sibling were placed in the care of their maternal grandmother. At the latest follow-up, the child showed no developmental regression or other complications.

3. Discussion

This case illustrates several important aspects of pediatric methamphetamine toxicity. While most pediatric exposures manifest with sympathomimetic signs, our patient presented with the rare complication of status epilepticus, estimated to occur in only 5% of methamphetamine poisonings(4). The rapid onset and severity of symptoms correlate with methamphetamine's enhanced lipid solubility and accelerated blood-brain barrier penetration(2,5)

The management of methamphetamine-induced status epilepticus presents a therapeutic challenge due to limited pediatric-specific protocols. Current evidence supports benzodiazepines as first-line therapy for both agitation control and seizure management in methamphetamine-poisoned children(4) Our stepwise approach—progressing from benzodiazepines to levetiracetam and finally continuous midazolam infusion—aligned with recent toxicology guidance for refractory drug-induced seizures(6). Notably, we avoided phenytoin based on evidence suggesting limited efficacy in toxin-induced seizures (7,8)

This case emphasises several critical clinical lessons. First, clinicians must maintain a high suspicion for toxicological etiologies in pediatric patients presenting with unexplained neurological, cardiovascular, or behavioural manifestations. Second, thorough history-taking, including environmental assessment and caregiver reliability, is essential for identifying potential exposures. Inconsistent histories, evasive behaviour, and the social conditions of the caregiver can provide valuable insights into possible exposure to toxins

Third, the standard approach to status epilepticus may require modification in toxin-induced cases, with emphasis on benzodiazepines and consideration of alternative second-line agents.

From a public health perspective, this case highlights the intersection of substance use disorders and child safety. Recent studies demonstrate increasing rates of unintentional pediatric exposures to illicit substances in households where drugs are present(9). Emergency physicians serve as critical sentinels in identifying potential child neglect and initiating appropriate protective measures. In Malaysia, the Child Act 2001 provides the legal framework for healthcare professionals to collaborate with welfare and law enforcement agencies to protect vulnerable children.

This rare presentation of methamphetamine poisoning-induced status epilepticus in a toddler highlights the need for early recognition and prompt, aggressive management of illicit drug exposures in pediatric populations. Emergency and pediatric teams must remain vigilant, particularly when presented with nonspecific or unexplained clinical findings. This case also emphasises the critical importance of caregiver

education, secure storage of potentially harmful substances, and the role of social services in preventing recurrent harm. With appropriate treatment and follow-up, the prognosis can be favourable, as illustrated by the child's return to normal developmental milestones.

Conflict of interest

The authors would like to declare the were no conflicts of interest in publishing this case report.

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Authors' contributions

Concept: S.S.S.A., Design: S.S.S.A., Data Collection or Processing: S.S.S.A., Analysis or Interpretation: M.I.K.M., S.S.F.S., N.K.A., N.M.A.K., Literature Search: S.S.S.A., M.I.K.M., S.S.F.S., N.K.A., N.M.A.K., Writing: S.S.S.A., M.I.K.M., S.S.F.S., N.K.A., N.M.A.K.

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