CASE REPORT

Pediatric methamphetamine poisoning: Case report of a one-year-old child

Esat Barut,[1] Kemal Barut[2]

[1]Department of Emergency Surgery, Silvan Dr. Yusuf Azizoğlu State Hospital, Diyarbakır-*Türkiye*
[2]Department of Emergency Surgery, Gazi Yaşargil Training and Research Hospital, Diyarbakır-*Türkiye*

ABSTRACT

Methamphetamine is a derivative of amphetamine and is widely abused across the globe. It is highly addictive and acts as a potent stimulant of the central nervous system (CNS). Due to its lipophilic nature, methamphetamine easily crosses the blood-brain barrier, leading to significant neurological dysfunctions and even neuronal degeneration. The clinical signs and symptoms of methamphetamine intoxication can vary considerably depending on factors such as the dose ingested, route of administration, duration of exposure (acute and/or chronic), and method of use. Common clinical manifestations include euphoria, increased energy, insomnia, anxiety, substance-induced psychosis, decreased appetite, weight loss, heightened self-confidence, increased libido, fever, tachycardia, sweating, hypertension, tremors, mydriasis, blurred vision, and seizures. Children are particularly vulnerable, as their metabolism and nervous systems are more sensitive compared to adults, making the toxic effects more pronounced. Accidental ingestion of drugs and other substances is a frequent occurrence in pediatric populations and can lead to severe health complications. Therefore, it is crucial for healthcare professionals to promptly and accurately evaluate and manage such poisoning cases. This case report presents the clinical findings, diagnostic process, and treatment management of a one-year-old male child who accidentally ingested crystal methamphetamine orally. Additionally, the report highlights key aspects of effective case management, emphasizes preventive measures to reduce the risk of accidental drug and substance ingestion in children, and aims to raise awareness on this issue.

Keywords: Methamphetamine; pediatric poisoning; accidental drug ingestion.

INTRODUCTION

Children, due to their natural curiosity and tendency to explore their environment, are at risk of ingesting anything within reach. Accidental ingestion of drugs and other substances is a common occurrence, especially among young children. This is particularly true for harmful chemicals or medications found in the home, although various types of poisoning can occur. Methamphetamine is a derivative of amphetamine and is frequently abused worldwide.[1] Due to its high lipophilicity, methamphetamine has a stronger effect and a longer half-life compared to other amphetamines, with a greater potential for harm.[2,3] It easily crosses the blood-brain barrier, causing significant dysfunction and even neuronal degeneration, particularly in brain regions such as the striatum, prefrontal cortex, and hippocampus.[4] Methamphetamine is highly addictive and acts as a powerful central nervous system (CNS) stimulant (psychostimulant). It is available in powder, crystal, or tablet forms, and can be smoked, injected, snorted, or ingested orally. Following oral ingestion, the onset of euphoria typically occurs within 5 to 20 minutes, and the effects can last between 8 to 12 hours.[5] Methamphetamine affects the dopaminergic, noradrenergic, serotonergic, and opioid neurotransmitter systems, leading to immediate behavioral and cognitive changes.[6] Therefore, diagnosis is primarily based on patient history and clinical presentation. The clinical signs and symptoms of methamphetamine intoxication can vary significantly depending on factors such as dose, route of administration, duration

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Address for correspondence: Esat Barut
Department of Emergency Surgery, Silvan Dr. Yusuf Azizoğlu State Hospital, Diyarbakır, Türkiye
E-mail: esbarut94@gmail.com

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of use (acute and/or chronic), and method of use.[2] Common clinical manifestations include euphoria, increased energy, insomnia, anxiety, substance-induced psychosis, decreased appetite, weight loss, increased self-confidence, heightened libido, fever, tachycardia, sweating, hypertension, tremors, mydriasis, blurred vision, and seizures.[7,8] In children, adrenergic symptoms may resemble those seen in adults, but additional signs such as vomiting, abdominal pain, agitation, restlessness, and repetitive stereotypical behaviors may also occur. These atypical and nonspecific symptoms can complicate diagnosis and may require further medical investigation.[9]

CASE REPORT

A one-year-old male child was brought to the emergency department by his parents due to suspected accidental ingestion of a foreign substance. The parents reported seeing several white crystalline particles in the child's hand, wrapped in paper. A history of substance abuse was noted in the surrounding environment, although the family had attempted to maintain a secure living space for the child. The child had no known medical conditions or recent illnesses and was previously in good health. The parents were unaware of the quantity or type of the substance ingested. Approximately 30 minutes after the incident, the child began to exhibit sweating and disorientation, prompting placement in the red zone for urgent care.

On examination, the child presented with signs of severe agitation, involuntary movements, and psychotic symptoms, such as attempting to grasp and eat non-existent objects. Additional findings included tremors, sweating, and restlessness. His skin was cold and clammy, pupils were dilated, and muscle tone was slightly increased, accompanied by tremors, though reflexes remained normal. He had tachycardia (160 bpm) and a fever (38.5°C), while blood pressure, blood glucose levels, and oxygen saturation were within normal limits. Continuous cardiac and respiratory monitoring was initiated. Tepid sponging was applied to help reduce the fever. An intravenous catheter was placed, and intravenous crystalloid fluids were administered. During follow-up, the patient experienced a seizure, for which diazepam was given. A nasogastric lavage was performed, followed by the administration of activated charcoal to address the possibility of other possible toxic ingestions. A cranial computed tomography (CT) scan was conducted to rule out alternative diagnoses, and the results were normal. Blood tests revealed metabolic acidosis, elevated lactate levels, and mildly increased creatine kinase and lactate dehydrogenase levels, with no other significant abnormalities (Table 1). A urine toxicology test confirmed the presence of methamphetamine.

After stabilization in the emergency department, the child was admitted to the pediatric intensive care unit for continued supportive care. Following 48 hours of monitoring, the child was discharged in good condition. Written informed consent was obtained from the the patient's parents for this case report.

Table 1. Blood test results and reference ranges

Test	Result	Unit	Reference Range
Lactate Dehydrogenase	316	U/L	0-248
Creatine Kinase	195	U/L	0-171
Lactate	3.6	mmol/L	0.5-2.2
Ph	7.3		7.35-7.45
HCO3	18.8	mEq/L	21-23

DISCUSSION

Stimulant drugs such as methamphetamine can be fatal, particularly in young children, making early diagnosis and prompt treatment essential.[10] In cases of methamphetamine poisoning, treatment primarily focuses on mitigating the drug's effects and stabilizing vital functions. Benzodiazepines are administered to control seizures, while fluid replacement and electrolyte balance are maintained.[11] If symptoms of psychosis, hypertension, or tachycardia develop, additional interventions may be required. Temperature regulation and minimizing external stimulation are also critical components of the treatment process.[11] Monitoring in pediatric cases typically continues for 24-48 hours, depending on the severity of the poisoning. The earlier the intervention is initiated, the better the treatment outcomes.[11] Accidental ingestion of substances or medications can have serious consequences in children. Therefore, preventive measures are crucial to ensure their safety and reduce the risk of poisoning. These measures include storing substances and medications in secure locations, educating parents and children about the dangers of harmful substances, being familiar with emergency contact numbers, and keeping emergency kits readily available at home. To the best of our knowledge, this case report represents the first documented instance of crystal methamphetamine poisoning in a one-year-old infant. It underscores the fact that poisoning, of any type, can occur across all age groups. Therefore, accurate recognition of toxicological cases and ensuring the safety of children are of paramount importance.

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REFERENCES

1. Laureys S, Boly M, Moonen G, Maquet P. Synthetic Drugs: The Case of Amphetamine. Journal of Security Studies. 2018;20(1):105–12. [CrossRef]
2. Schep LJ, Slaughter RJ, Beasley DMG. The clinical toxicology of methamphetamine. Clin Toxicol (Phila). 2010;48(7):675–94. [CrossRef]
3. Vearrier D, Greenberg MI, Miller SN, Okaneku JT, Haggerty DA. Methamphetamine: history, pathophysiology, adverse health effects, current trends, and hazards associated with the clandestine manufacture of methamphetamine. Dis Mon. 2012;58(2):38–89. [CrossRef]
4. Meyer JS, QL. Psychopharmacology: Drugs, the Brain, and Behavior.
5. Ernst T, Chang L, Leonido-Yee M, Speck O. Evidence for long-term neurotoxicity associated with methamphetamine abuse: A 1H MRS study. Neurology. 2000;54(6):1344–9. [CrossRef]
6. Miner NB, Phillips TJ, Janowsky A. The Role of Biogenic Amine Transporters in Trace Amine-Associated Receptor 1 Regulation of Methamphetamine-Induced Neurotoxicity. J Pharmacol Exp Ther. 2019;371(1):36–44. [CrossRef]
7. Cruickshank CC, Dyer KR. A review of the clinical pharmacology of methamphetamine. Addiction. 2009;104(7):1085–99. [CrossRef]
8. Moore K. Drug overdoses. Oxford Desk Reference: Acute Medicine. 2016.
9. Malashock HR, Yeung C, Roberts AR, Snow JW, Gerkin RD, O'Connor AD. Pediatric Methamphetamine Toxicity: Clinical Manifestations and Therapeutic Use of Antipsychotics-One Institution's Experience. J Med Toxicol. 2021;17(2):168–75. [CrossRef]
10. Yiğit M, Gökdöl MY, Kalaycı F, Akca Çağlar A, Akcan Yıldız L, Kurt F, et al. Pediatric Methamphetamine Intoxication: Single Center Experience. Turkish Journal of Pediatric Disease. 2022;1–5. [CrossRef]
11. Richards JR, Laurin EG. Methamphetamine Toxicity. Pediatr Emerg Care. 2023;15(4):306. [CrossRef]

OLGU SUNUMU - *ÖZ*

Pediatrik metamfetamin zehirlenmesi: 1 yaşındaki çocuk olgu sunumu

Metamfetamin, dünya çapında sıkça suistimal edilen bir amfetamin türevidir. Yüksek derecede bağımlılık yapıcı olup, merkezi sinir sisteminin (MSS) güçlü bir uyarıcısıdır (psikostimülan). Özellikle lipofilik yapısı nedeniyle, kan-beyin bariyerini kolaylıkla aşarak ciddi disfonksiyonlara ve hatta nöronal dejenerasyona yol açabilmektedir. Metamfetamin zehirlenmesinin klinik bulguları ve semptomları, alınan doz, uygulama yolu, maruziyet süresi (akut ve/veya kronik) ve kullanım şekline bağlı olarak büyük ölçüde değişkenlik gösterebilir. Klinik belirtiler genellikle öfori, enerji artışı, uykusuzluk, anksiyete, maddeye bağlı psikoz, iştah azalması, kilo kaybı, kendine güven artışı, libido artışı, ateş, taşikardi, terleme, hipertansiyon, tremor, midriyazis, görme bulanıklığı ve nöbetler şeklinde ortaya çıkmaktadır. Çocukların metabolizması ve sinir sistemi, yetişkinlere kıyasla daha hassas olduğundan, bu toksik etkiler çocuklarda daha belirgin görülebilir. Çocuklarda kazara ilaç ve madde alımları yaygın bir durum olup, ciddi sağlık sorunlarına yol açabilmektedir. Bu nedenle, sağlık profesyonellerinin bu tür zehirlenme vakalarını dikkatli ve hızlı bir şekilde değerlendirmesi ve doğru şekilde yönetmesi büyük önem taşımaktadır. Bu olgu sunumunda, 1 yaşındaki bir erkek çocuğun kazara oral yoldan kristal formda metamfetamin alımına bağlı olarak gelişen klinik bulguları, tanı süreci ve tedavi yönetimi ele alındı. Ayrıca, bu tür vakaların başarılı bir şekilde yönetilmesinde kritik noktalar vurgulanarak, çocuklarda kazara ilaç ve madde alımının önlenmesine yönelik alınabilecek önlemler üzerinde durulmuş ve bu konuda farkındalığın artırılması amaçlanmıştır.

Anahtar sözcükler: Kazara uyuşturucu madde alımı; metamfetamin; pediatrik zehirlenme.

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