Methamphetamine Overdose and Fatality : 2 Cases Report

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Abstracts

Methamphetamine abuse is an important problem in Thailand. The number of addicts and abusers is increasing. Abusers usually use speed pills by oral ingestion or inhalation. The dose used is about 5-60 mg of methamphetamine while the lethal dose reported is 200 mg. Death due to methamphetamine toxicity is uncommon. In this paper, we report two cases of methamphetamine fatalities. Both cases were drug dealers. They swallowed a handful of methamphetamine tablets while being arrested. The autopsy revealed nonspecific findings. Using thin layer chromatography technique, methamphetamine was detected in the urine, blood, stomach and liver of the corpses. This circumstance has been reported elsewhere and might be increased in Thailand as more speed pills are circulated in illegal markets.

Key word : Addiction, Abuser, Autopsy, Drug-Dealer, Toxicity

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Methamphetamine, which is known to addicts as 'speed', is an important problem of drug of abuse in Thailand. It is estimated by the Office of Narcotic Control Board that about 200 million methamphetamine tablets will be circulated in illegal markets. An illicit methamphetamine tablet sold in Thailand consists of about 20-30 mg of methamphetamine and about 50-60 mg of caffeine [1]. Methamphetamine can be used by intravenous injection, oral ingestion or inhalation[2]. However, the latter two routes of administration are commonly used by abusers in Thailand. Addicts usually take a quarter of a tablet up to two tablets at a time. Deaths from methamphetamine overdose are un-

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common in Thailand. In this paper, we report two cases of methamphetamine fatality in drug dealers who were under arrest and then swallowed a number of methamphetamine pills.

Case 1

A 43-year-old male was admitted to Maharaj Nakorn Chiang Mai hospital. He was arrested and charged with being a drug dealer. While being arrested, he swallowed a number of methamphetamine tablets. In the emergency room, he was in a comatose state. His pupils were 4 mm in diameter and still reacted to light. The muscle tone was increased. He died 6 hours after taking methamphetamine.

Autopsy findings

The autopsy was performed 10 hours after death. From external findings, there was a 3-cm scalp contusion on the frontal area of the head and small abrasion wounds on the right frontal area and the nose. There was no skull fracture. No intracranial hemorrhage was observed. There was no other obvious pathological change causing death.

Laboratory investigation

Methamphetamine was detected in the gastric content, blood and urine of the victim using thin layer chromatography (TLC) technique.

Case 2

A 33-year-old female was arrested and charged with being a methamphetamine dealer. At the police station, she took a number of methamphetamine tablets from her bra and swallowed all of them. The actual number of tablets she took is not known, but it was noted in the referral note that there were about 40 tablets. She was brought to a nearby community hospital and then referred to a hospital center. Treatment was given including gastric larvage. She was pronounced dead in that hospital about 10 hours after ingestion of methamphetamine. The body was then sent to the department of Forensic Medicine, Chiang Mai University for medicolegal autopsy.

Autopsy findings

The autopsy was performed 36 hours after death. The corpse showed signs of decomposition. There was no traumatic wound observed. The internal organs could not be evaluated due to decomposition of the body.

Laboratory investigation

Methamphetamine was identified in the liver and gastric contents using thin layer chromatography. Blood and urine were not available for the test due to tissue decomposition.

DISCUSSION

Methamphetamine abuse is an important problem in Thailand. The number of addicts and abusers is increasing, partly due to more drug supply. In Thailand, addicts abuse methamphetamine by oral ingestion or inhalation. Usually they use methamphetamine 1/4 - 2 tablets at a time. Each tablet of 'speed' sold in Thailand consists of 20-30 mg of methamphetamine and 50-60 mg of caffeine [1]. The patterns of abuse can be occasional use, daily use or run (sprees) in which abusers take large amounts of the drug over a few or several days then pause for a few days[3]. When administered by oral route, the peak serum concentration of methamphetamine is reached 1.25 hours after ingestion[2].

Methamphetamine acts by promoting the release of neurotransmitters, especially norepinephrine (NE) and dopamine (DA), and inhibiting their reuptake from the synapse[4]. It also inhibits enzyme monoamine oxidase (MAO) that inactivates cathcholamine[4]. The result is increasing NE and DA at the synaptic sites, consequently increasing sympathetic activity. The pharmacological effects of methamphetamine mainly involve the cardiovascular, central and peripheral nervous systems[5]. Methamphetamine can cause hypertension, hypertensive crisis, tachycardia and dysarryhtmia. The manifestations of CNS effects are euphoria, hyperactive, aggressive attitude, excitement, mania, high energy, rigid speech, rapid flight of ideas, decreased appetite, agitation, confusion and delusion[3,6]. In chronic abuse, psychotic symptoms can be observed[3]. Long term use of methamphetamine can produce withdrawal syndrome after cessation of the drug. These symptoms are irritability, disorganization, hypersomnolence, extreme fatigue, exhaustion and depression[6,7]. High dose of methamphetamine consumption can cause death[3,8]. The minimal lethal dose of amphetamines is 200 mg[9]. Death due to methamphetamine overdose is associated with cardiovascular effect[3], intracerebral hemorrhage[10], or hyperthermia[11].

We report 2 cases of methamphetamine overdose and death that came to the department of

Forensic Medicine, Chiang Mai University. Both victims were drug dealers who swallowed a number of speed pills. The exact number of tablets is not known. The autopsy showed nonspecific findings in one case and undetermined details in the other case due to decomposition of the body. Logan et al reported pulmonary congestion and edema in one massive methamphetamine ingestion[12]. Other findings that can be found in methamphetamine overdose are petechial hemorrhages, pericardial petechiae, visceral organ congestion and centrolobular hepatic necrosis[9,13]. Intracerebral hemorrhage, intracranial vasculitis or cerebritis is observed in cases of death due to cerebrovascular cause[10,13].

Using thin layer chromatography as an analytical technique, methamphetamine was detected in the blood and urine in one case, in the liver of the decomposed case and in the gastric content of both cases. The level of methamphetamine in the blood and tissues in this report could not be determined due to the limitation of the analytical technique. The fatal blood concentrations of methamphetamine were reported between 0.09-18 mg/L[3]. In cases of massive methamphetamine ingestion, the level of methamphetamine and amphetamine in blood were 53.7 and 0.43 mg/L, respectively[12]. Death can occur several hours after intake of methamphetamine even though intensive treatment is given[9,12].

In Thailand, death due to methamphetamine overdose is not common in abusers partly because the dose they used is less than the lethal dose which is 200 mg. For drug dealers, they might not know of the lethal effect of speed pills. When they are under arrest together with the pills, they might swallow an amount of tablets only to eliminate the evidence therefore overdose occurs. Similar circumstances have been reported previously and methamphetmaine was found in the liver, gastric contents and blood of those cases[12,14,15].

SUMMARY

We report two cases of acute fatality due to massive oral methamphetamine tablets ingestion. The autopsy revealed nonspecific findings. The cause of death was confirmed by the history of methamohetamine ingestion and the detection of methamphetamine in the urine, stomach, liver and blood. Although methamphetamine fatality is uncommon, the number might be increased due to more drug dealers trying to get rid of pills while being arrested.

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REFERENCES

1. Studying of the development of methamphetamine production in Thailand Volume II. The Information System Development Division, Drug Demand Reduction Bureau, Office of the Narcotic Control Board of Thailand. November 1997.
2. Busto U, Bendayan R, Sellers EM. Clinical pharmacokinetics of non-opiate abused drugs. Clinical Pharmacokinetics 1989;16:1-26.
3. Logan BK, Fligner CL, Haddix T. Cause and manner of death in fatalities involving methamphetamine. J Forensic Sci. 1998; 43: 28-34.
4. Seiden LS, Sabol KE, Ricaurte GA. Amphetamine: effects on catecholamine systems and behavior. Annu Rev Pharmacol Toxicol 1993, 32: 639-77.
5. Ellengorn MJ, Barceloux DG. Amphetamines In; Medical Toxicology: Diagnostic and Treatment of Human Poisoning. Elsvier 1988: 626-41.
6. Logan BK. Methamphetamine and driving impairment. J Forensic Sci. 1996; 41: 457-64.
7. Lago JA, Kosten TR. Stimulant withdrawal. Addiction 1994; 89: 1477-81.
8. Lora-Tamayo C, Tena T, Roderiguez A. Amphetamine derivative related deaths. Forensic Sci Int 1997; 85: 149-57.
9. Cox DE, Williams KR. 'ADAM' or 'EVE'?- a toxicological conundrum. Forensic Sci Int 1996; 77: 101-8.
10. Harrington H, Heller HA, Dawson A, Caplan L, Rumbaugh C. Intracerebral hemorrhage and oral amphetamine. Arch Neurol 1983; 40: 503-7.
11. Callaway CW, Clark RF. Hyperthermia in psychostimulant overdose. Ann Emerg Med 1994; 24: 68-76.
12. Logan BK, Weiss EL, Harruff RC. Case report: distribution of methamphetamine in a massive

fatal ingestion. J Forensic Sci. 1996; 41: 322-3.
13. Olsen ER. Intracranial hemorrhage and amphetamine usage, review of the effects of amphetamines on the central nervous system. Angiology 1997; 28: 464-71.
14. Smith DE. The characteristics of high dose methamphetamine abuse. Int J Addict 1969; 4: 453-9.
15. Cravey RH, Baselt RC. Methamphetamine poisoing. J Forensic Sci Soc 1968; 8: 118-20.

การเสียชีวิตจากการได้รับสารเมทแอมเฟตามีนเกินขนาด รายงานผู้ป่วย 2 ราย

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ปัญหาการระบาดของสารเสพติดประเภทยาบ้า นับเป็นปัญหาที่สำคัญของประเทศในปัจจุบัน ยาบ้าที่จำหน่ายในประเทศไทยมีสารเมทแอมเฟตามีนเป็นส่วนประกอบที่สำคัญ และอาจมีคาเฟอีนเป็นส่วนผสมอยู่บ้างในบางแหล่งผลิต จำนวนผู้ที่ใช้และเสพติดยาบ้ามีมากขึ้นเรื่อยๆ สาเหตุประการหนึ่งจากการที่มีการผลิตยาบ้าจำนวนมากออกสู่ท้องตลาด โดยทั่วไปผู้ที่ใช้ยาบ้าจะเสพโดยวิธีกินหรือสูบ โดยจะใช้ครั้งละประมาณ $^1/_4$ – 2 เม็ด หรือคิดเป็นสารเมทแอมเฟตามีนประมาณ 5–60 มิลลิกรัม ขณะที่ขนาดของเมทแอมเฟตามีนที่ทำให้เสียชีวิตที่ได้มีรายงานไว้คือ 200 มิลลิกรัม การเสียชีวิตจากการได้รับเมทแอมเฟตามีนเกินขนาดพบได้ไม่บ่อยนัก ในรายงานนี้ได้รายงานผู้ที่เสียชีวิตจากการได้รับสารเมทแอมเฟตามีนเกินขนาดโดยการกลืนยาบ้าเข้าไปประมาณหนึ่งกำมือเพื่อต้องการทำลายหลักฐานของกลางในขณะที่ถูกเจ้าหน้าที่ตำรวจจับกุมในข้อหาจำหน่ายยาเสพติด ผลการตรวจชันสูตรศพไม่มีพยาธิสภาพที่เฉพาะเจาะจง ผลการตรวจทางห้องปฏิบัติการตรวจพบสารเมทแอมเฟตามีนในปัสสาวะ เลือด กระเพาะอาหารและตับที่เก็บตรวจจากศพ โดยวิธี Thin Layer Chromatography จากประวัติที่ได้รับยาบ้าเข้าไปปริมาณหนึ่งกำมือร่วมกับการตรวจไม่พบสาเหตุการตายจากสาเหตุอื่นและผลการตรวจพบสารเมทแอมเฟตามีนในร่างกาย จึงสรุปความเห็นว่าเสียชีวิตจากได้รับเมทแอมเฟตามีนเกินขนาด การเสียชีวิตในกรณีเช่นนี้อาจมีมากขึ้นในประเทศไทย เนื่องจากมีผู้จำหน่ายยาบ้ามากขึ้น และมีการจับกุมมากขึ้น ผู้ที่ถูกจับกุมไม่ทราบถึงอันตรายที่เกิดขึ้นจากการกินยาบ้าเข้าไปจำนวนมาก โดยหวังเพียงจะทำลายหลักฐานเท่านั้น

คำสำคัญ : สารเสพติด, ผู้ติดสารเสพติด, ผู้ค้าสารเสพติด, การตรวจชันสูตรศพ, การเกิดพิษ

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