

Reckless behaviour related to the use of 3,4-methylenedioxymethamphetamine (ecstasy): apropos of a fatal accident during car-surfing

Peter J. Hoof, Herman P. van de Voorde

Katholieke Universiteit te Leuven, Laboratory of Forensic Medicine, Kapucijnenvoer 35 niv. 03, B-3000 Leuven, Belgium

Received January 3, 1994 / Received in revised form March 14, 1994

Summary. A 26-year-old man died from severe brain contusion after falling from a moving car during an attempt at car-surfing. Toxicological urine screening was positive for amphetamines, the blood analysis revealed a MDMA level of 0.63 mg/l and a blood alcohol concentration of 1.23 g/l. The case is another example of the bizarre and reckless behaviour which may result from the euphorogenic activity of ecstasy and the circumstances in which it is commonly used.

Key words: Accidental death – Behaviour – Ecstasy – 3,4-Methylenedioxymethamphetamine – Drug abuse

Zusammenfassung. Es wird vom Todesfall eines 26-jährigen Mannes berichtet, der sich beim Versuch des „Auto-Surfen“ auf einen fahrenden Wagen tödliche Schädelhirnverletzungen zuzog. Das toxikologische Urin-Screening erbrachte das Vorhandensein von Amphetaminen, und die Analyse des Blutes führte zum Nachweis von 0,63 mg/L MDMA und einer Blutalkoholkonzentration von 1,23 g/L. Der vorliegende Fall ist ein weiteres Beispiel für die bizarre und leichtsinnige Verhaltensweise unter Einfluß von MDMA („Ecstasy“), welche auf die euphorisierende Wirkkomponente und die Umstände, unter denen es eingenommen wird, zurückzuführen ist.

Schlüsselwörter: Verkehrsunfall – Verhaltensweise – Ecstasy – 3,4-Methylenedioxymethamphetamin – Drogenmißbrauch

Introduction

Introduced in 1914 as an appetite suppressant 3,4-methylenedioxymethamphetamine (MDMA, ecstasy) has never been commercialized, although it has been advocated by some as an adjuvant in psychotherapy [11, 13–15, 31]. In 1985 it was banned in the United States by the Drug Enforcement Administration as a Schedule I drug with high

potentials of abuse and no recognized medical applications. The drug nevertheless easily found its way to the illicit market and is now in widespread use as a recreational drug throughout the world, especially at parties [23, 25–27, 32].

MDMA shares a sympathomimetic activity with the other amphetamine analogues [8, 10, 11, 13]. It is also believed to induce euphoria and to enhance the perception and interaction with the environment, although its hallucinogenic potential would be low [2, 24, 29]. It has been suggested that MDMA is the prototype of a new pharmacological class of compounds, the entactogens [21]. Effects occur some 30 minutes after oral intake and they last for 4–6 hours [13]. MDMA is metabolized in the liver and is excreted in the urine. After oral ingestion of 50 mg MDMA the peak plasma concentrations are in the order 0.1 mg/L [1]. Although many ecstasy users succeed in keeping to moderate doses for prolonged periods, tolerance seems to occur and the intake of 20 tablets per week or even as many as 10 tablets in the course of one evening have been reported [16, 32].

Case report

On a Sunday morning at around 4 a.m. a 26-year-old man was brought to the hospital by an emergency ambulance after a bizarre accident on the public road. He had been standing on the roof of a moving car, holding tight to the ends of a rope coming out of the front side windows of the car. During acceleration on a straight part of the road, the man had lost his balance and had fallen to the ground.

Upon admission the patient was comatose and showed multiple bruises. Radiography revealed fractures of the right humerus, the right clavicle, the right parietal bone and the occipital bone. CT-scanning revealed massive subdural bleeding over the whole right hemisphere and severe brain contusion. Toxicological urine screening was positive for amphetamines. Blood analysis revealed a MDMA level of 0.63 mg/L and a blood alcohol concentration 1.23 g/L. No traces of other drugs were found. Despite emergency neurosurgical intervention and intensive medical care, the condition progressively worsened and the electroencephalogram flattened. The patient was declared dead some 36 hours after admission to hospital. No autopsy was performed.

Investigations revealed that the fatal accident took place at the conclusion of a private party, which was held at the house of one of the victim's friends. At the time of the accident some 20 young men were present at the party. Several people confirmed that the victim was a regular user of ecstasy and that he took an unknown number of tablets during the course of the evening. He did not eat anything of the food but consumed some glasses of beer. His behaviour at the party was described as cheerful, although to some degree obtrusive towards female participants. At a certain moment the men started to outbid each other in doing stunts, enthusiastically applauded by the girls present. It apparently all began rather innocently with things such as walking on their hands, balancing light glasses on their head and stripping acts, but it soon went on to include jumping from the window of the first floor and ended with the fatal attempt of car-surfing.

Discussion

Although 3,4-methylenedioxymethamphetamine (MDMA, ecstasy) has been perceived as relatively safe by users and some psychotherapists, there is now ample literature emphasizing the growing problem of potentially fatal adverse reactions. The main patterns of toxicity include cardiac arrhythmias, hyperthermia, convulsions, disseminated intravascular coagulation, rhabdomyolysis, renal failure, and liver failure [4-6, 9, 10, 12, 17, 28, 30]. In addition, acute and chronic psychosis have been associated with ecstasy abuse [3, 7, 18-20, 22, 27, 31, 32]. Although the severe cases mostly involved people who had ingested higher doses of ecstasy, the risk does not seem to be entirely dose-related and adverse reactions have been described even after one single dose.

Ecstasy-related accidents have been described earlier [1, 10, 17, 27], including some with bizarre behaviour such as climbing an electrical utility tower [10] and jumping into the path of oncoming traffic [7]. The present case is another example of the reckless behaviour which may result from the euphorogenic activity of ecstasy, although other factors probably have contributed to it. Indeed, the moderate alcohol intoxication alone could already have induced some euphoria, decreased self-control and imbalance, and it is not fully clear whether and to what extent ecstasy and alcohol physiologically and psychologically interact when they are taken simultaneously. In addition, the situation in which the fatal accident occurred probably played an important role. Apparently the party was rather crowded and there was a very cheerful and loose atmosphere. This may have stimulated the male participants to engage in a competition in which some characteristics of "cutting" behaviour may be recognized. Incited by their enthusiastic female spectators, the men may well have been dragged into a spiral of increasingly more spectacular stunts, up to the moment where the fatal accident abruptly brought an end to the psychological mass intoxication.

References

1. Baselt R, Cravey R (1989) Disposition of toxic drugs and chemicals in Man, 3rd edn. Year Book Medical Publishers, Chicago, pp 554-555
2. Baum R (1985) New variety of street drugs poses growing problem. Chem Eng News 63:7-16
3. Benazzi F, Mazzoli M (1991) Psychiatric illness associated with ecstasy. Lancet 338:1520
4. Benowitz N, Rosenberg J, Becker C (1979) Cardiopulmonary catastrophes in drug-overdosed patients. Med Clin North Am 63:267-296
5. Brown C, Osterloh J (1987) Multiple severe complications from recreational use of MDMA (ecstasy). JAMA 258:780-781
6. Chadwick I, Curry P, Linsley A et al. (1991) Ecstasy (MDMA), a fatality associated with coagulopathy and hyperthermia. J R Soc Med 84:371
7. Creighton F, Black D, Hyde C (1991) Ecstasy psychosis and flashbacks. Br J Psychiatry 159:713-715
8. Davis M, Hatoum H, Waters I (1987) Mini review, toxicity of MDMA considered for relevance to hazards of MDMA (ecstasy) abuse. Alcohol Drug Res 7:123-134
9. De Man R, Wilson J, Tjen H (1993) Acuut leverfalen door MDMA (ecstasy). Ned Tijdschr Geneesk 137:727-729
10. Dowling G, McDonough E, Bost R (1977) 'Eve' and 'ecstasy': a report of five deaths associated with the use of MDEA and MDMA. JAMA 257:1615-1617
11. Downing J (1986) The psychological and physiological effects of MDMA on normal volunteers. J Psychoact Drugs 18:335-340
12. Fahal I, Sallomi D, Yaqoob M et al. (1992) Acute renal failure after ecstasy. BMJ 305:29
13. Greer G, Strassman R (1985) Information on ecstasy. Am J Psychiatry 142:1391
14. Greer G, Tolbert R (1986) Subjective reports of the effect of MDMA in a clinical setting. J Psychoact Drugs 18:319-327
15. Grinspoon L, Bakalar J (1986) Can drugs enhance the psychotherapeutic process? Am J Psychother 40:393-404
16. Henry J (1992) Ecstasy and the dance of death. BMJ 305:5-6
17. Henry J, Jeffreys K, Dawling S (1992) Toxicity and deaths from 3,4-methylenedioxymethamphetamine (ecstasy). Lancet 340:384-387
18. McCann U, Ricaurte G (1991) Lasting neuropsychiatric sequelae of MDMA (ecstasy) in recreational users. J Clin Psychopharmacol 11:302-305
19. McCann U, Ricaurte G (1992) MDMA (ecstasy) and panic disorders: induction by a single dose. Biol Psychiatry 32:950-953
20. McGuire P, Fahy T (1991) Chronic paranoid psychosis after misuse of MDMA (ecstasy). BMJ 302:697
21. Nichols D (1986) Differences between the mechanism of action of MDMA, MBDB, and the classic hallucinogens. Identification of a new therapeutic class: entactogens. J Psychoact Drugs 18:305-313
22. Pallanti S, Mazzi D (1992) MDMA (ecstasy) precipitation of panic disorders. Biol Psychiatry 32:91-95
23. Peroutka S (1987) Incidence of recreational use of MDMA (ecstasy) on an undergraduate campus. N Engl J Med 317:1542-1543
24. Peroutka S, Newman H, Harris H (1988) Subjective effects of MDMA in recreational users. Neuropsychopharmacology 1:273-277
25. Randall T (1992) Ecstasy-fueled 'rave' parties become dances of death for English youths. JAMA 268:1505-1506
26. Randall T (1992) 'Rave' scene, ecstasy use, leap atlantic. JAMA 268:1506
27. Schifano F (1991) Chronic atypical psychosis associated with MDMA (ecstasy) abuse. Lancet 338:1335
28. Screaton G, Singer M, Cairns H et al. (1992) Hyperpyrexia and rhabdomyolysis after MDMA (ecstasy) abuse. Lancet 339:677-678
29. Snyder S (1986) Drugs and the brain. Freeman, New York, pp 179-205
30. Suarez R, Reimersma R (1988) Ecstasy and sudden cardiac death. Am J Forensic Med Pathol 9:339-346
31. Whitaker-Azmitia P, Aronson T (1989) Ecstasy-induced panic. Am J Psychiatry 146:119
32. Winstock A (1991) Chronic paranoid psychosis after misuse of MDMA. BMJ 302:1150-1151