



## Case Report

## About a Fatal Clinical Case of Chemsex

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### Abstract

**Background:** Chemsex and slam represent a serious public health concern that has to be considered and requires the attention of both clinical and forensic toxicologists. We report a fatal clinical case involving 3-Methyl Methcathinone (3-MMC) and its derivative synthetic cathinone, 3-Chloro-Methcathinone (3-CMC) intoxication in a 30 year old male patient with existing mental and behavioral disorders due to the use of psychoactive substances diagnosis (section F11-19 according to ICD-10). The patient used synthetic cathinone, 24 times a day by intravenous route (slamming) during chemsex and committed suicide following visual and auditive hallucinations.

**Methods:** The patient's hair was analyzed for new psychoactive substances NPS using forensic methods, in a collaborative effort between clinical and forensic services.

**Findings:** A total of 1462.3 pg/mg of 3-MMC were detected in the patient's hair indicating chronic consumption. But no 3-CMC was found traces of cyamemazine, venlafaxine, fluoxetine, propranolol, tramadol, zopiclone and oxomemazine were also detected in the patient's hair sample.

**Conclusion:** The patient death was associated with the use of drugs, specifically the chronic use of 3-MMC. This case report highlights the importance of collaboration between clinical and forensic services for accurate diagnosis and patient care.

**Keywords:** Fluoxetine; Propranolol; Tramadol; Zopiclone

### Introduction

Chemsex and slam represent a serious public health concern that requires the attention both clinical and forensic toxicologists. 3-Methyl Methcathinone (3-MMC or metaphedrone) is a synthetic cathinone, recently introduced in the market of the New Psychoactive Substances (NPS), initially to replace mephedrone (4-Methyl

Methcathinone or 4-MMC), and rapidly spread widely among drug users. 3-MMC is legally controlled in many countries, but it is still easily available for purchase from websites, and frequently found in recreational settings. Most toxicological data on this drug come from human case reports of intoxications [1]. This NPS was recently deemed responsible for several intoxications and deaths [2]. In recent years, the availability and the consequent consumption of NPS have proliferated at an unprecedented rate, posing a significant risk to public health and challenging law enforcement efforts to tackle the black market (Figure 1).



**Figure 1:** Significant analytical drug identification found in black market. Note: a) Chem-safe of 3-MMC and 3-CMC; b) 3-MMC drug in black market.

Furthermore, wide availability through the Internet and unmonitored shipping has facilitated the diffusion of NPS internationally. In these circumstances, the forensic activity based on the process of analytical drug identification, is crucial for accurate diagnosis as well as the investigation, drug seizure and insights into the drug black market transformation. In this regard, during the COVID-19 pandemic in Italy, NPS were identified in 92.6% of the samples. The most prevalent compounds identified were synthetic cathinones, in particular 3-MMC, which accounted for 18.6% of the total cases [3]. Analysis of 21 NPS in wastewater in Australia was performed over the Christmas New Year period when recreational drug use tends to be high. Seven NPS (butylone, butyryl fentanyl, furanyl fentanyl, methoxetamine, N-ethylpentylone, pentylone and valeryl fentanyl) were found, with N-ethylpentylone showing the highest mass loads at 36 mg/day/1000 inhabitants. No 3-MMC was found with limits of detection between 0.01 and 0.5 ng/L and limits of quantification between 0.05 and 1 ng/L [4].

Chemsex and slamsex represent a serious public health concern that has to be considered by both clinical and forensic toxicologists. Indeed, such practices appear to carry a significant degree of risk, including acute intoxication. Nine reports detailing chemsex/slamsex-related intoxication cases were published between 2016 and 2020 [5]. These articles reported overall total of 13 cases, all involving men with a mean age of  $39.1 \pm 9.8$  years. The outcome was fatal in 6 of the cases. 4-MEC and GHB were the two predominant drugs identified. However, given the rapid emergence of novel NPS in the global market as well as the ease with which they can be accessed through the Internet, it is imperative that toxicological laboratories be ready to detect new substances that are used in chemsex/slamsex. A Swedish project, STRIDA, found that the most frequent clinical features of NPS were tachycardia (48% of cases) and agitation (42%). Other features included a reduced level of consciousness (32%), dilated pupils (24%), hallucinations (20%), diaphoresis (12%), seizures (8%), and hyperthermia (6%). Most patients (60%) required hospital care for only 1 day but in 8%, 3 days or longer were required [6].

## Case Presentation

We present a fatal clinical case of NPS intoxication in a patient with pre-existing mental and behavioral disorders due to the use of psychoactive substances diagnosis (ICD-10-CM code F11.19).

The patient was a 30 year-old male seen at the addictology unit at EPSM Georges DAUMEZON, in Orleans France with anxiety, agitation and facial sweating. He described a feeling of very intense and short-lived refreshing sensation: "as if I had taken a very strong mint". The patient reported nausea and vomiting more frequently than usual with an increased sensation of intense eyestrain and photophobia. He also reported a dry mouth and skin dryness with the appearance of eczematous patches, particularly at the roots of the lower limbs. He reported nightmares without suicidal ideation. On physical examination the patient had heart rate of 130-140 BPM at rest, with no change in blood pressure.

The patient had a history of alcohol and cocaine consumption which he replaced by synthetic cathinone for the past 2-3 years. The patient reported using synthetic cathinone, 24 times a day by intravenous route. He claimed to use NPS in order to reduce his obsessive-compulsive disorder symptoms and severe anxiety. Although he claimed that the use of NPS led to relaxation, he also reported nausea and venous infections.

He usually purchased 3-MMC from darkweb. He recently noticed a change in the texture of the substance, which reminded him of the 3-CMC he already tried several years ago which he then mixed with the 3-MMC. Upon enquiring through the website, he was informed that the sale of 3-MMC had been banned in the Netherlands and that it had therefore been replaced by 3-CMC.

Under the supervision of the addictology unit at (name of hospital of), the patient reduced the number of injection to 15 injections per day of 0.15 g in a reduced-risk approach. The patient reported near constant craving, thereby increasing the dose to 0.23 g but quickly returned to the usual doses between 0.15 g and 0.20 g, increasing the injection rate to 17 injections per day versus.

The patient had declined in-patient care and stayed at home. He was found dead 24 hours after clinical examination determined to be due to suicide due to hallucinations. A hair sample of the patient was analyzed using forensic methods in a collaborative effort between Orleans hospital, Paris Saclay University and Strasbourg forensic institute.

They analyzed the patient's hair sample, after an extensive screening, on LC-MS/MS lab method over 6 months (depending on the possibility of the 6 cm sample) the presence of 3-MMC. A total of 1462.3 pg/mg of 3-MMC was detected, and no traces of 3-CMC. No other NPS, cocaine, amphetamines, or cannabinoids were found. But other drugs were identified in the same sample: Cyamemazine, venlafaxine, fluoxetine, propranolol, tramadol, zopiclone and oxememazine. The patient did not receive any medical prescription about these drugs.

## Results and Discussion

Clinical findings and toxicological results were very useful to confirm the over-use of 3-MMC, which may explain the death of our patient. Use of these NPS drugs is associated with high-risk sexual behaviors. In this regard, the prevalence of sexually-transmitted infectious diseases is higher in men who use methamphetamine or

who practice slamming, chemsex. Thus, interventions to prevent Chemsex are required [7]. Recent reports on the abuse of novel synthetic cathinone derivatives call attention to the serious physical and psychological risks resulting from their consumption, thereby emphasizing the growing use of these drugs, which constitutes an important public health issue [8,9]. Faced with this apparently growing phenomenon, there is an urgent need to inform medical professionals on the identification, prevention and management of the medical and psychological problems resulting from these practices [10].

## Conclusion

We did not found 3-CMC but we found 3-MMC corresponding a chronic exposition. NPS substances need to be search in all fatal intoxications, particularly in young patient deaths. Medical and university approach could facilitate the optimized procedure to treat chemsex and slamer patients. This Paris Saclay university team and Strasbourg forensic institute collaboration provided a very high level of specialized advice for Orleans hospital, which is a peripheral hospital. It permitted to confirm NPS consummation by the patient and suggested a possible link between the patient's death, his clinical findings and the use of 3-MMC. It will be very useful to have the capacity to detect cathinone in the blood of in patients that arrive to the emergency department and to recognize clinical symptoms that should orientate medical staff physician on duty to the possibility of a chemsex case.

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## References

1. Ferreira B, Dias da Silva D, Carvalho F, de Lourdes Bastos M, Carmo H (2019) The novel psychoactive substance 3-methylmethcathinone (3-MMC or metaphedrone): A review. *Forensic Sci Int* 295: 54-63.
2. Dias da Silva D, Ferreira B, Roque Bravo R, Rebelo R, et al. (2019) The new psychoactive substance 3-methylmethcathinone (3-MMC or metaphedrone) induces oxidative stress, apoptosis, and autophagy in primary rat hepatocytes at human-relevant concentrations. *Arch Toxicol* 93: 2617-2634.
3. Vincenti F, Gregori A, Flammini M, Di Rosa F, Salomone A (2021) Seizures of new psychoactive substances on the Italian territory during the COVID-19 pandemic. *Forensic Sci Int* 326: 110904.
4. Bade R, Abdelaziz A, Nguyen L, Pandopulos AJ, White JM et al. (2020) Determination of 21 synthetic cathinones, phenethylamines, amphetamines and opioids in influent wastewater using liquid chromatography coupled to tandem mass spectrometry. *Talanta* 208: 120479.

5. Drevin G, Rossi LH, Férec S, Briet M, Abbara C. Chemsex/ slamsex-related intoxications: A case report involving gamma-hydroxy butyrate (GHB) and 3-methylmethcathinone (3-MMC) and a review of the literature. *Forensic Sci Int* 2021;321:110743.
6. Bäckberg M, Lindeman E, Beck O, Helander A (2015) Characteristics of analytically confirmed 3-MMC-related intoxications from the Swedish STRIDA project. *Clin Toxicol (Phila)* 53: 46-53.
7. Donnadiou-Rigole H, Peyrière H, Benyamina A, Karila L (2020) Complications related to sexualized drug use: What can we learn from literature? *Front Neurosci* 14: 548704.
8. Karila L, Billieux J, Benyamina A, Lançon C, Cottencin O (2016) The effects and risks associated to mephedrone and methylone in humans: A review of the preliminary evidences. *Brain Res Bull* 126: 61-67.
9. Karila L, Lafaye G, Scocard A, Cottencin O, Benyamina A (2018) MDPV and  $\alpha$ -PVP use in humans: The twisted sisters. *Neuropharmacology* 134: 65-72.
10. Benyamina A. (2022) Chemsex Report. Vie publique Ministère de la Santé.