12-2021

Police Officers use of Ketamine to Subdue Alleged Criminals

Maria Onofre
monofre@mail.stmarytx.edu

Peter Platterborze
pplatterborze@stmarytx.edu

12-2021

Police Officers use of Ketamine to Subdue Alleged Criminals

Maria Onofre

Peter Platterborze

Police Officers use of Ketamine to Subdue Alleged Criminals

By

Maria I. Onofre

HONORS THESIS

Presented in Partial Fulfilment of the Requirements for Graduation from the Honors Program of St. Mary's University

San Antonio, Texas

Peter J Platterborze

Dr. Peter Platterborze

Associate Professor of Forensic Science

Dr. Camille Langston

Dr. Camille Langston

Director, Honors Program

December 2, 2021

Police Officers use of Ketamine to Subdue Alleged Criminals

Maria I. Onofre* and Peter L. Platteborze

St. Mary's University, San Antonio, TX (*part of senior thesis project)

History

The rise of ketamine came with the search for a better anesthetic. Its history begins in the 1950's in Detroit, Michigan, USA. In the Parke-Davis and Company's laboratory, research was being conducted to find an 'ideal' anesthetic agent with analgesic properties, pain relief properties, from cyclohexylamines. On March 26, 1956, Maddox, a chemist, discovered a process that allowed the synthesis of phencyclidine, PCP (Mion, G., 2017). However, it wasn't until 1962 that Parke-Davis Laboratories developed ketamine as a response to increasing worries of aggressive behavioral problems and adverse psychological reactions associated with PCP (Wolff, K., & Winstock, A. R., 2006). Just like PCP, ketamine is a dissociative drug with the potential of creating hallucinations, produce visual and auditory distortions, and detachment from reality (Alcohol and Drug Foundation, 2021). ketamine was first used as an anesthetic by veterinaries and later it was used on humans. Before it was patented by Parke-Davis for human and animal use in 1966, Belgium patented ketamine in 1963. By 1969 ketamine became available by prescription in the form of ketamine hydrochloride, also known as ketalar. The next year, 1970, the United States Food and Drug Administration officially approved the use of ketamine on humans (Mion, G., 2017). As a rather safe anesthetic, ketamine has been used as a key anesthetic for American soldiers during the Vietnam War. Its popularity did not go down with the passing of years; instead, ketamine remains one of the most widely used anesthetics in both veterinary medicine and hospital medicine. ketamine's psychosis-like effects have led to its use on schizophrenia patients; however, it has also led to its use as a recreational drug. Since before ketamine was accepted for use on humans, it was abused as far back as the 1960s (Morgan, C. J. A., & Curran, H. V., 2011).

Ever since being officially approved, ketamine has been marketed as an injectable, short-acting anesthetic in the US. In 1999, different forms of ketamine became a schedule III non-narcotic substance. The Controlled Substances Act included ketamine's salts, isomers, and salts of isomers; however, it currently has accepted medical use for short-term sedation and anesthesia with the inclusion of 2019 FDA approved S(+) enantiomer of ketamine for a nasal spray version as a form of treatment against depression that can only be obtained at a certified doctor's office or clinic. Currently, ketamine can be found as a powder or a liquid (Drug Enforcement Administration, 2020). Despite the unusual history and severe side effects of ketamine, it has found a prominent place within several areas of medicine ranging from simple anesthesia in a clinic to being used on the battlefield (Wolff, K., & Winstock, A. R., 2006).

Properties, Administration, and Dosage of Ketamine

Ketamine is usually presented in the form of a clear liquid or as a white/off-white powder. (Drug Enforcement Administration, 2020) It exists in two optimal isomers, S(+) and R(-) cyclohexanone, which have different affinities at the NMDA receptor, a glutamate receptor and ion channel found in neurons, leading to similar pharmacokinetic profiles. (Morgan, C. J. A., & Curran, H. V., 2011). As an anesthetic derivative of PCP, ketamine has dissociative, analgesic, and psychedelic properties. The main difference between ketamine and PCP is the shorter lifespan and the less problematic effects (Wolff, K., & Winstock, A. R., 2006). ketamine is most often introduced into the body by medical and veterinarian staff as an injectable (Drug Enforcement Administration, 2020). However, as a recreational drug, ketamine can be swallowed, snorted, injected, or smoked with cannabis and tobacco (Alcohol and Drug Foundation, 2021). It is rarely taken orally due to the fast metabolism into norketamine which changes from a mainly psychedelic experience into a more sedative one (Morgan, C. J. A., & Curran, H. V., 2011).

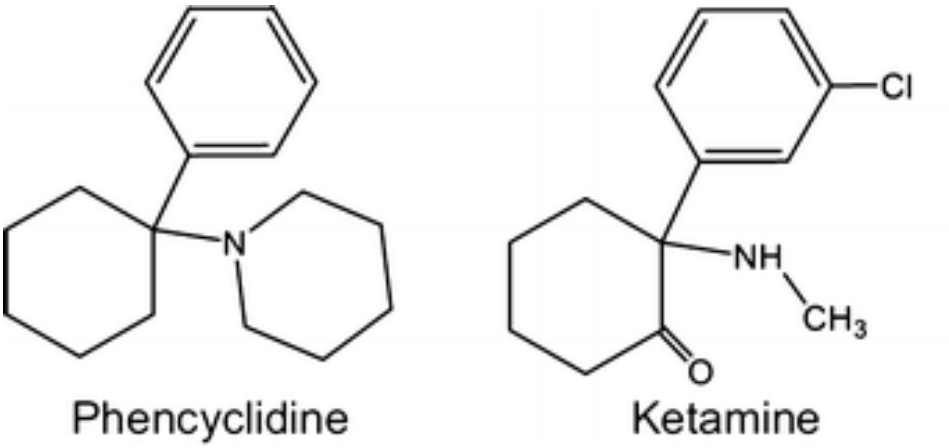

Figure 1: The chemical structure of PCP and ketamine.

Just like PCP, ketamine has the potential for abuse. Constant use of ketamine could lead to low or moderate physical dependance or high psychological dependence (Drug Enforcement Administration, 2020). The effects of ketamine can be experienced at different rates depending on the way it was introduced into the body. If it is injected, it would take about 1 minute for the effects to be experienced. If it is snorted, it would take about 5 to 15 minutes. If it is swallowed, it could take up to 30 minutes. Regardless of how it is introduced, the effects can last for around an hour, but the user's coordination and/or senses can be affected for up to 24 hours. (Alcohol and Drug Foundation, 2021). Ketamine distorts sight and sound causing a person to feel disconnected from their body leading them to believe they have no control over their actions. A few minutes after taking ketamine, the user can experience an increase in heart rate and blood pressure which decreases over the next 10 to 20 minutes. Apart from increasing heart rate and blood pressure, ketamine can cause unresponsive behavior to stimuli leading to involuntary rapid

eye movement, dilated pupils, salivation, tear secretion, stiff muscles, and nausea. Ketamine can induce a state of calmness, immobility, pain-relief, and amnesia while under the influence. Aside from the state of calmness, ketamine can also induce agitation, depression, cognitive difficulties, and unconsciousness (Drug Enforcement Administration, 2020). Those who use ketamine daily and those who are ex-users have shown increased signs of depression unlike those who never used the drug. One of the many increasing physical health problems associated with high ketamine usage appears to be hydronephrosis, water in the kidney, which is second only to urinary tract problems (Morgan, C. J. A., & Curran, H. V., 2011).

It is never encouraged to take ketamine with other drugs without consulting a doctor because the effects can be unpredictable and dangerous (Alcohol and Drug Foundation, 2021). The mixture of ketamine with other drugs, over the counter or prescribed, leaves an effect that can range from pain and discomfort to increased risk of death or death itself (Editorial Staff, 2019). When ketamine is used alongside alcohol, opiates, and other depressants, the combination can lead to the heart or lungs slowing down or stopping. In the worst-case scenario, the combination can lead to death. When ketamine is used alongside amphetamines, ecstasy, and cocaine, the body suffers a huge strain leading to a faster heart rate. (Alcohol and Drug Foundation, 20211). The consumption of ketamine with alcohol is especially harmful since studies have shown that it leaves the user more prone to suffer from urinary tract and gastrointestinal problems from blood in urine to lower abdominal pain and those in between. The most dangerous combination would be the use of ketamine with other depressant drugs such as tranquilizers, opioids, or alcohol. The combination leads to the slowing down of the central nervous system which results in a variety of events that could get increasingly dangerous. The effects can lead to memory loss, slowed breathing, decreased heart rate, coma, or even death (Editorial Staff, 2019).

A study to examine all deaths in the United Kingdom between 1993 and 2006 where ketamine was found in the body found that 19 out of 23 cases had a combination of ketamine with other drugs. A different study in New York City between 1997 to 1999 where non-hospital deaths involving ketamine found that 12 out of 15 deaths were aided by polydrug overdoses with ketamine being one of the drugs used. A more recent study from reported exposures to poison centers in the United States over a 16-year period found half of the exposures to involve the use of ketamine in concurrence with an additional drug. This specific study also found that more serious outcomes were reported in ketamine exposures with a multitude of substances leading to at least 20 recorded deaths (Editorial Staff, 2019). A ketamine overdose can cause unconsciousness and slowed breathing that could be dangerously slow (Drug Enforcement Administration, 2020). An overdose is normally non-lethal if it’s just ketamine by itself because of its ability to make the user unconscious with minimal impact on the airway reflexes and blood circulation. However, just like every person who goes unconscious, the danger comes from external forces; the user can experience such as physical harm or accidents (Alcohol and Drug Foundation, 2021, October 6).

Pharmacological use

Ketamine is known as a dissociative anesthetic because of its properties to make a patient feel detached from their pain and surroundings (Drug Enforcement Administration, 2020). Like PCP, ketamine produces a profound analgesia and amnesia without slowing down the heart or the breathing of the patient; however, patients have reported a variety of unusual symptoms. The symptoms reported range from delusions and confusions to out-of-body experiences and near-death experiences. These reported symptoms lead to the decrease usage of ketamine as an anesthetic on humans. The decreased usage of ketamine did not completely keep it away from the medical field. Currently, ketamine is still being used in specialized anesthesia, some specific pediatrics, veterinaries, and field medicine. Around the world in places that have limited availability to equipment, ketamine is the drug of choice because of its good safe profile. In veterinary medicine, ketamine is the most widely used anesthetic in all animal species. Ketamine prevents neurons in the spinal cord from becoming sensitized to painful stimuli, also known as ‘wind-up'. In small doses, ketamine given before, during, and after operations greatly improve a patient's post-surgery pain relief. The research for uses for ketamine is ongoing with the focus being on treatment-resistant depression and in heroin and alcohol addiction (Morgan, C. J. A., & Curran, H. V., 2011). When used properly in hospitals, ketamine helps relieve pain. It also contains neuroprotective, anti-inflammatory, and anti-tumor effects. However, even with all its good qualities, ketamine is derived from PCP and retains some of its hallucinate effects. About 20% of people who are given ketamine have a bad reaction or hallucination after waking up from the dissociative anesthetic (Young, R., & McMahon, S., 2020).

Off-label/Illegal uses

The synthetization of ketamine was to replace the use of PCP, also known as Angel Dust, in the medical field so as to decrease the harmful effects PCP has on the body (Morgan, C. J. A., & Curran, H. V., 2011). Since ketamine is synthesized from PCP, it also produces dissociative sensations and hallucinations which leads to it being one of multiple drugs which are abused. In the United States, the illegal distribution of ketamine comes from diverted or stolen medicine sent to veterinary clinics, or smuggled in from Mexico. Most of the distribution of ketamine occur among friends and acquaintances during raves, nightclubs, and at private parties. Ketamine is rarely seen in street sales (Drug Enforcement Administration, 2020). When it is sold or distributed illegally, ketamine comes as a white or off-white powder (Alcohol and Drug Foundation, 2021, October 6). When the user experiences a ketamine trip, it is known as a ‘Special K’ trip. The trip is known to be better than that of LSD or PCP because of the short duration of its hallucinatory effects which last approximately 30 to 60 minutes. The effects of ketamine usually take effect in a rapidly manner; although, it does take slower to appear if ketamine is taken orally. The most common use for powder ketamine is to cut it into lines and snort it. The other way is to smoke it in marijuana or tobacco cigarettes. On the other hand, liquid ketamine is either injected or mixed into drinks usually for sexual assaults. For illegal use, ketamine is most often found by itself or in combination with MDMA, amphetamine, methamphetamine, or cocaine (Drug Enforcement Administration, 2020).

Law enforcement use

Ketamine is used as a common anesthetic in hospitals, but it has been used outside of hospitals as a forced sedative by paramedics when requested from police (Han, A., 2021). There are several justified reasons for administering ketamine outside of the hospital setting. Such reasons can range from car accidents to seizures at the individual's home; however, the events where ketamine use is justified occur rarely (Young, R., & McMahon, S., 2020). The use of ketamine was never proposed by anyone within the police force as a tool to be used when subduing an alleged criminal. It was used because the resource was available for paramedics to use upon the officer's request. Despite the risks that ketamine can introduce, police and paramedics use ketamine in such a casual manner where drug usage has increased drastically in recent years (Han, A., 2021).

The American Society of Anesthesiologists has been opposing "chemically incapacitating" suspects via the use of ketamine and other sedatives (Young, R., & McMahon, S., 2020). This was especially important when the police incident which led to a young man's death occurred. Video footage from the incident showed neither of the suspects resisting arrest when the ketamine was asked to be administered. In Aurora, Colorado, 23-year-old Elijah McClain and 25-year-old Elijah McKnight were given doses of ketamine during separate police incidents. McClain ended up going into cardiac arrest only to die several days later. McKnight was set up on life support and survived. It is clearly seen that ketamine was not needed and lead to severe side effects for both young men and many others who have been administered when not resisting. The increased use of ketamine out in the field in recent years and the concern of the public called for investigations throughout the United States. The downside is the lack of statistics and strong data on ketamine use in police arrests (Han, A., 2021). Many paramedics are coming forward with their accounts of how police officers have pressured them into using ketamine when it wasn't warranted (Young, R., & McMahon, S., 2020).

Paramedics are usually called when the individual displays signs of intoxication or mental health crisis. In these cases, where ketamine is injected multiple times, it is cited as extreme delirium for the justification. Excited delirium has generally been used as a scapegoat in multiple cases that resulted in death during police custody (Han, A., 2021). Police use the definition given by the Natural Center for Biotechnology Information for extreme delirium. The Natural Center of Biotechnology Information defines extreme delirium as "bizarre and aggressive behavior, shouting, paranoia, panic, violence toward others, unexpected physical strength, and hyperthermia." The syndrome of extreme delirium is not recognized by many major medical organizations, such as the American Medical Association. Those with medical backgrounds are pointing out how police officers should be allowed to diagnose when they aren't trained for it. Even those who are medically trained have difficulty diagnosing extreme delirium (Young, R., & McMahon, S., 2020).

While it is true that there can be legitimate medical reasons for administering ketamine out in the field, restraining an agitated suspect handcuffed on the ground is commonly not

considered as a valid reason. In Colorado alone, within the expand of two and a half years, the police use of ketamine on suspects was recorded to be more than 900 times for excited delirium. Police have defended their use of ketamine by stating how the suspects can be belligerent and dangerous when drugs, alcohol, and/or mental health issues are present during arrest or intervention (Young, R., & McMahon, S., 2020).

Conclusion

Ketamine is readily accessible and widely used throughout both the criminal justice field and the medical field; however, that does not excuse the abuse of it by police officers to immobilize already compliant suspects. The 2020 president for the American Society of Anesthesiologists, Mary Dale Peterson, said in an interview, "It is about doing it for the right reasons in the right dosages with monitoring and well-trained personnel under medical direction, but not just for law enforcement purposes." (Young, R., & McMahon, S., 2020). Ketamine already came with warnings from being derived from PCP, so its usage in the criminal justice system is redundant. The system has seen just how bad a wrong dosage can leave a man, yet they insist on continuing the usage of ketamine. The cross-over from the medical field to the criminal justice field should never have happened and many people would still be present today.

References

Alcohol and Drug Foundation. (2021, October 6). *Ketamine*. Ketamine - Alcohol and Drug Foundation. Retrieved November 4, 2021, from https://adf.org.au/drug-facts/ketamine/.

Congressman Neguse introduces legislation to ban ketamine two years after the death of Elijah Mcclain. U.S. Congressman Joe Neguse. (2021, June 14). Retrieved November 4, 2021, from https://neguse.house.gov/media/press-releases/congressman-neguse-introduces-legislation-to-ban-ketamine-two-years-after-the-death-of-elijah-mcclain.

Drug Enforcement Administration. (2020, April). *Drug fact sheet: Ketamine - deagovdev.dea.gov*. Ketamine. Retrieved November 4, 2021, from https://www.dea.gov/sites/default/files/2020-06/Ketamine-2020.pdf.

Editorial Staff. (2019, December 9). *Mixing ketamine with other substances*. American Addiction Centers. Retrieved November 4, 2021, from https://americanaddictioncenters.org/ketamine-abuse/mixing-ketamine.

Gliha, L. J. (2021, June 14). *Ketamine bill introduced at federal level, 2 years after Elijah Mcclain's death*. FOX31 Denver. Retrieved November 4, 2021, from https://kdvr.com/news/problem-solvers/ketamine-bill-introduced-at-federal-level-two-years-after-death-of-elijah-mcclain/.

Han, A. (2021, June 9). *Student post: Ketamine use by police should stop*. Wilson Center for Science and Justice | Bringing Empirical Research to Criminal Justice Reform. Retrieved

November 4, 2021, from https://wcsj.law.duke.edu/2021/06/student-post-ketamine-use-by-police-should-stop/.

Mion, G. (2017, September). *History of anaesthesia: The ketamine story – past, present and future*. European Journal of Anaesthesiology. Volume 34 - Issue 9 - p 571-575 doi: 10.1097/EJA.0000000000000638 Retrieved November 4, 2021, from https://journals.lww.com/ejanaesthesiology/fulltext/2017/09000/history_of_anaesthesia__the_ketamine_story___past,.2.aspx.

Morgan, C. J. A., & Curran, H. V. (2011, July 4). *Ketamine use: a review*. Addiction: Overview. Retrieved September 8, 2021, from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.929.1043&rep=rep1&type=pdf.

Young, R., & McMahon, S. (2020, September 8). *Some states allow authorities to use ketamine to subdue suspects in the field. but is it safe?* Some States Allow Authorities To Use Ketamine To Subdue Suspects In The Field. But Is It Safe? | Here & Now. Retrieved November 4, 2021, from https://www.wbur.org/hereandnow/2020/09/08/ketamine-police-safety-elijah-mcclain.

Wolff, K., & Winstock, A. R. (2006). Ketamine: from medicine to misuse. CNS Drugs, 20(3), 199+. https://link.gale.com/apps/doc/A199914819/HRCA?u=txshracd2556&sid=bookmark-HRCA&xid=720a0b6c