



AN EMERGENCE DRUG ABUSE: XYLAZINE

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Abstract:

Veterinary anaesthetics have become more widely used as recreational drugs over the past ten years. This study's objective was to provide evidence of "Anastacia de caballo" (xylazine) consumption among drug users in human and its effects. The two focus groups were held to talk about the specifics of xylazine use, its effects, and usage knowledge. 80.7% of people used xylazine regularly. More than 42% of the sample utilised speedball and xylazine together. Although injections were the primary method of xylazine administration, 14% of patients also reported using the drug inhalation ally. Skin lesions were reported by more than 35% of the sample, and at least one overdose incident was reported by 21.1%.

Keywords: Xylazine, Inhalation, Overdose.

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INTRODUCTION:

In the growing drug addiction and overdose problem, Xylazine, a non-opioid veterinary tranquilizer that is not licenced for human use according to US- FDA. It has been connected to an increasing number of overdose deaths countrywide (1). The San Francisco Office of the Chief Medical Examiner (OCME) found that four people who died from drug overdoses between mid-December 2022 and mid-January 2023 had low levels of xylazine in their systems, according to a statement issued by the San Francisco Department of Public Health on February 16, 2023 (2).

Learn more from the American Centres for Disease Control and Prevention about the consequences of using multiple types of drugs (polysubstance use). (CDC). Skin ulcers, abscesses, and associated problems are also linked to frequent xylazine usage (3).

Xylazine, sometimes known as "tranq" is a central nervous system depressant that can impair memory, cause forgetfulness, and severely reduce breathing, heart rate, and blood pressure. The danger of a fatal overdose is increased by taking opioids along with xylazine and other CNS depressants like alcohol or benzodiazepines (4).

People report injecting, snorting, ingesting, or inhaling xylazine or medications containing it. A partial alpha-2 adrenergic agonist, xylazine shares traits and adverse effects with phenothiazines and clonidine (5).

Animals may receive this medication intravenously, intramuscularly, or subcutaneously alone, in conjunction with other anaesthetics such as ketamine, barbiturates, chloral hydrate, and halothane, or in any combination of these (6). When used on humans, it is known to cause severe bradycardia and hypotension as a result of vagal stimulation. There have been reports of severe deliberate xylazine intoxication from eating, inhalation, and injection (7).

The risks of xylazine exposure in humans:

Nowadays, xylazine poses more dangers to human exposure because it is not intended for human usage. The US-DFA cautions regarding xylazine usage in humans, citing reports of zombie-like symptoms as a result of xylazine misuse.

Zombie: It describes a person who is said to have died and been supernaturally reanimated, but who is unable to talk or move (as in voodoo belief and in literature). Additionally, it describes a

paranormal power that, according to voodoo belief, has the power to reanimate a dead body (8).

Because it has become a very familiar character that participates in narratives of the body, of life and death, of good and evil, and that makes reference to alterity, racism, and speciesism as well as the inevitable and immovable, the concept of the zombie has spread extensively and across a wide range of disciplines (9). As a result, it leads us to "the other side," where we experience isolation, death, and what is much worse than death: the condition of being undead. We know a tonne about zombies, including their likes, appearance, and biochemistry, so they're obviously not just a fantasy (10).

A zombie is "a relentlessly aggressive human or reanimated human corpse driven by a biologic infection," according to the Zombie Research Society. The current status of zombies is succinctly summarized in this description, both narratively (in the stories about them) and in terms of how they might help us understand pandemics, contagion patterns, and prevention (11). Zombies also offer a helpful way to examine worries about rapidly proliferating diseases in the first world, the "shock doctrine" used in the reporting of pandemics, emerging diseases, and, more recently, the impact of antimicrobial resistance. One goal is to restore balance between fear of infection and the importance of having a working knowledge of microbiology (12). Indeed, Bishop asserts that this development may be the result of "post-9/11 anxieties about potential terrorist attacks via anthrax, avian influenza, swine flu, and other forms of biologic warfare" and contends that interest in apocalyptic contagion narratives may outlive that in zombie stories (13).

Symptoms

Numerous symptoms were brought on by the medication, including extreme tiredness, respiratory depression, and open sores that could become severe and spread swiftly. If the ulcers are left untreated, they may develop into eschar, which requires amputation (14).

An research from Philadelphia in 2021 discovered that xylazine was present in 90% of lab-tested dope samples. When used with other illegal substances, xylazine enhances the chance of an overdose. The appeal of Xylazine stems from the fact that it prolongs (15).

Pharmacology of xylazine:

A α_2 -adrenergic agonist, xylazine works by stimulating central α_2 -receptors. It shares a

chemical structure with phenothiazines, tricyclic antidepressants, and clonidine. The central nervous system is depressed as a result of xylazine's inhibition of neurotransmitter release of both dopamine and norepinephrine at the neuronal synapse. It has been shown in animal studies to provide drowsiness for 1-4 hours and analgesia for 15–30 minutes (16). Xylazine use as an adulterant may enhance the effects of heroin due to the drug's secondary site of action, increasing the danger of overdosing. Between 40 and 2400 mg of xylazine are needed to cause toxicity in humans. In fatal overdose cases, xylazine serum values ranged from trace to 16 mg/L. There may not be a clearly defined "safe" blood concentration of xylazine, as seen by the considerable overlap between deadly and non-fatal doses (17).

Half-life of xylazine: 23-50 Minutes (18).

Xylazine toxicity - Diagnosis and treatment:

Drugs like heroin, fentanyl, and cocaine are frequently falsified in order to change the effects of

other drugs or increase their bulk. In a substance known as a "speedball," which is a combination of heroin and cocaine, xylazine is particularly frequently employed as an adulterant. Xylazine has been abused for a variety of reasons, including: drug abuse, attempted sexual assault, accidental or deliberate poisoning (19).

Additionally, Xylazine is abused without the aid of other medicines. There are several ways to take medication, including smoking, sniffing, ingesting, inhaling, and injecting. In the United States, xylazine is known by the street names "tranq", "tranq dope," or "sleep cut," whereas in Puerto Rico it is known as "Anestecia de Caballo" (20).

Hypotension, bradycardia, miosis, drowsiness, and hypotension are symptoms of xylazine poisoning. Since there is presently no cure for xylazine overdose, supportive measures should be used to keep the heart rate, blood pressure, and patency of the airways (21).

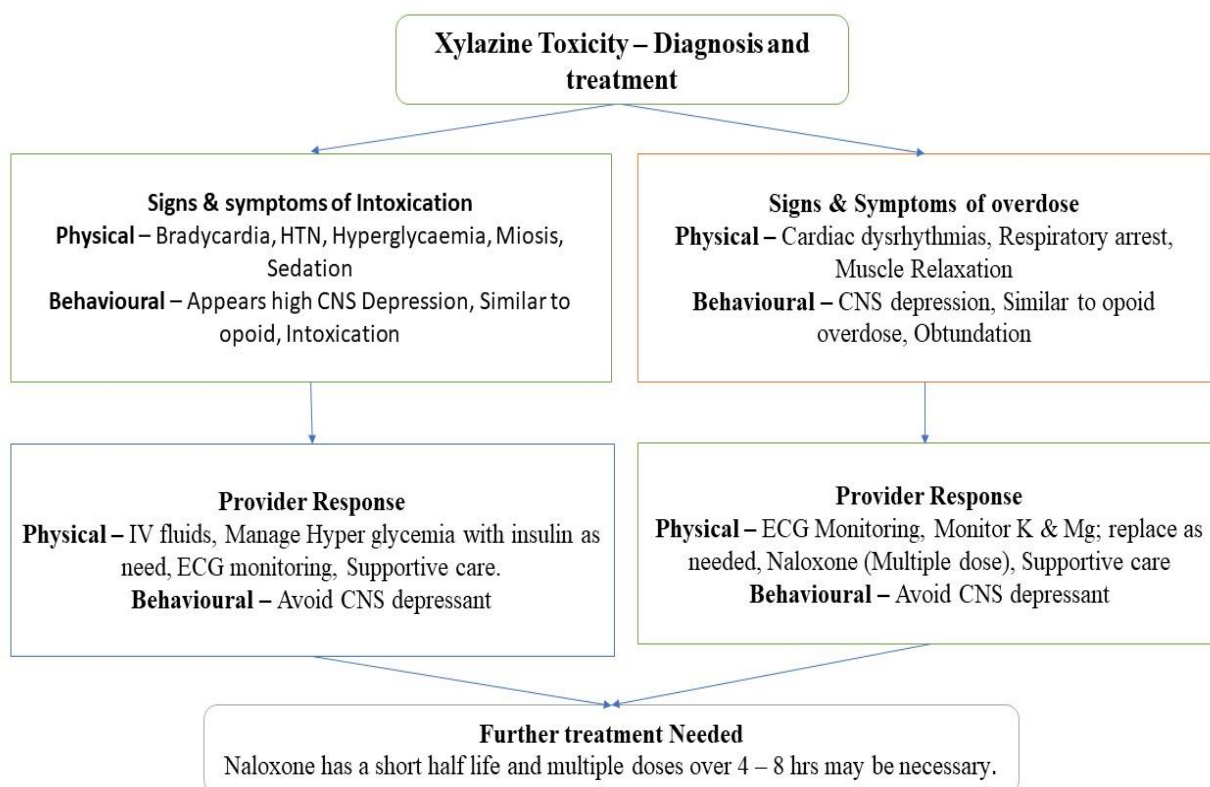


Figure-01: Nevada State Opioid Response, October 2020

Xylazine Toxidrome and Effects:

CNS and respiratory depression, hypotension, bradycardia, hypothermia, miosis, and elevated blood glucose levels are all signs and symptoms of

acute xylazine poisoning. This toxidrome may resemble that of opioids, making it difficult to distinguish between opioid toxicity and xylazine toxicity (22).

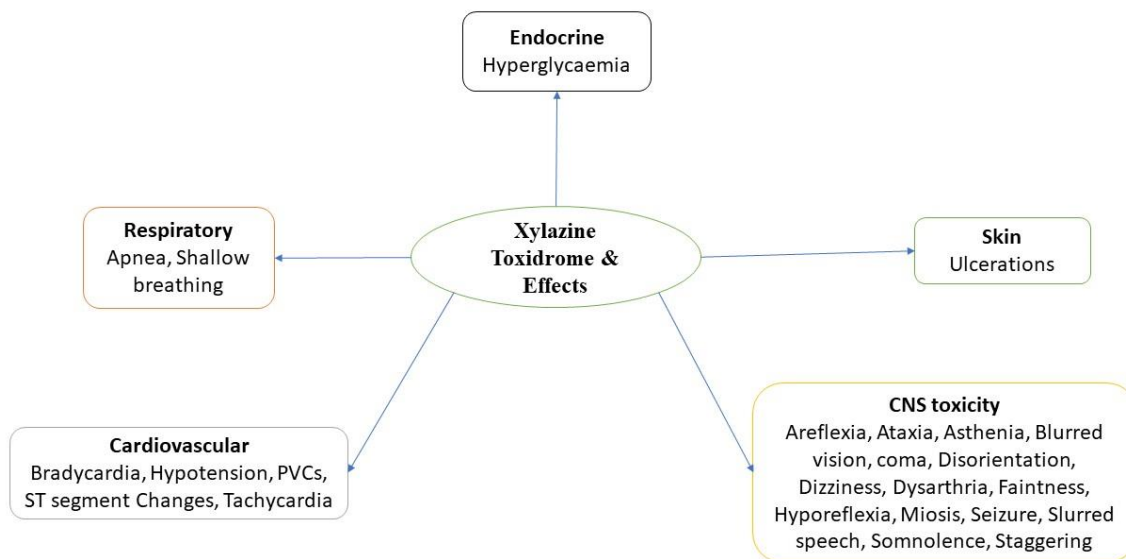


Figure-02: Xylazine Toxidrome and Effects

Treatment for xylazine overdose:

The bulk of treatment for xylazine overdose in humans remains supportive, and there is no recognised antidote. There are conflicting accounts regarding naloxone's ability to reverse the effects of a xylazine overdose. In fact, a weak response to naloxone may indicate concurrent xylazine or non-opioid consumption. Since xylazine and opioids are frequently combined, naloxone could help with the confusing side effects of the opioids (23).

Yohimbine, a natural α_2 adrenergic antagonist, has not been approved for use in humans but has been demonstrated to counteract the antihypertensive effects of xylazine in dogs and elephants. An α_2 -antagonist called atipamezole is used to treat animal toxicity caused by α_2 -agonists (24).

Although studies have proven its efficiency in reversing the sedative and cardiovascular effects of α_2 -agonists in human trials, it is still not FDA-approved for usage in humans. Before prescribing this medication, healthcare professionals should think about the ethical and legal ramifications. Supporting respiratory function and maintaining stable blood pressure should be the two main goals of the treatment team for a patient with a suspected xylazine overdose. Endotracheal intubation, intravenous fluid resuscitation, vasopressors, ECG monitoring, and blood glucose and electrolyte monitoring are some of the emergency care options (25) [25].

Atropine, pacing, IVF, and vasopressors can all be used to treat bradycardia and hypotension. As initial hypertension may be followed by severe

hypotension, avoid aggressively treating hypertension(26) [26].

CONCLUSION:

Our analysis revealed instances of documented human overdose. The pharmaceuticals market's most common adulterant is xylazine. In fact, reports from drug users imply that xylazine may be changing from an adulterant to a base substance. Further research is needed to discover the risk factors related with xylazine consumption and its health implications.

ABBREVIATIONS:

US-FDA- United States Food and Drug Administration.

OCME- Office of the Chief Medical Examiner

CDC- Centres for Disease Control

CNS- Central Nervous System

ECG-Electro Cardio Gram

IVF: In Vitro Fertilization

CONFLICT OF INTERESTS:

Authors Declare no conflict of interest.

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