Pro-active Drug Facilitated Sexual Assault Using Sedative - hypnotic Medication

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Drug facilitated sexual assault (DFSA) can be defined as sexual activity occurring where consent is invalid or absent due to the effects of drugs and/or alcohol. We report a rare case of pro-active drug facilitated sexual assault involving non-oral administration of sedative-hypnotic intoxicant without primary alcoholic ingestion. For eight years, a male nurse administered sedative-hypnotic drugs to patients admitted to the hospital unit, in order to subsequently maintain sexual intercourse with them. The intravenous administration without primary alcoholic ingestion distinguishes this case of pro-active drug facilitated sexual assault from those presented in associated literature.

Keywords: Drug facilitated sexual assault; Benzodiazepines; Barbiturates

Drug facilitated sexual assault (DFSA) can be defined as sexual activity occurring where consent is invalid or absent due to the effects of drugs and/or alcohol [1-6].

Drugs used in DFSA need to have certain characteristics both in terms of how they are administered and the effect they cause on the victim including (i) causing sedation and/or anterograde amnesia; (ii) being odourless and tasteless; (iii) dissolving readily in beverages; (iv) being rapidly absorbed after oral administration, and (v) being rapidly cleared from the body (within 24 h) [7, 8]. These substances may be self-administered by the victim (opportunistic DFSA) or administered by the offender (predatory/pro-active DFSA).

This report presents a rare case of pro-active drug facilitated sexual assault involving non-oral administration of sedative-hypnotic intoxicant without primary alcoholic ingestion.

Experimental part

In 2015, a teenage girl previously admitted to the Surgery Unit of the Emergency Hospital denounces a male nurse for rape. The medical attendant entered the room at night and intravenously administered the victim an unknown injectable substance without previously notifying it's name or use. During the administration, the aggressor started a dialogue with the underaged patient, asking her, amongst other subjects, whether she was sexually active. All this time, the victim felt inert, drowsy, unable to react or ask for help, but did not lose consciousness and realized she was being sexually abused.

The DNA exam confirmed the presence of sperm, which belonged to the offender, in the victim's vaginal discharge. No biological tests were collected for toxicological examination in order to establish the presence or the quantitive values of the sedative-hypnotic substances. As it follows from the hospital records, at the time of the victim's hospitalization, the medical unit was equipped with sedative drugs belonging to barbiturates and benzodiazepines class.

Police extended the investigation and subsequently discovered that, for eight years, the same nurse administered sedative-hypnotic drugs to the patients admitted to the hospital unit, in order to maintain sexual intercourse with them, related and witnessed aspect in conjuction with their medical records, doctors' statements, drug prescriptions and other hospital's available documents. Police has heard the testimony of dozens of patients who have been previously admitted to the Emergency Hospital's Surgery Unit since 2010, all confirming the nurse's behaviour.

Results and discussions

Benzodiazepines are a class of drugs which exhibit depressant properties on the CNS. Their medical purposes are mainly the treatment of anxiety and insomnia. This class is found in forms of capsules, tablets and injectables [9].

The applicable properties for DFSA, manifested by benzodiazepines intake, are sleepiness, fatigue, dizziness, impaired coordination and/or thinking, memory loss, drowsiness and confusion [14-18]. Benzodiazepines are compounds with lipophilic properties, therefore they are less soluble in polar solvents, as in ethanol and water. There is a connection between the solubility of lipids and the onset time, for example, the more lipid-soluble the drugs are, the faster the onset time will be (Table 1). The onset time ranges from a few minutes (for nitrazepam, lorazepam) up to 1.5 hours (for diazepam, temazepam). So contaminated drinks with lorazepam or nitrazepam will start taking action a lot more quickly than those contaminated with either diazepam or temazepam. Benzodiazepines half-lives can vary from long acting (100 hours for diazepam) to short acting (3 hours for

Compound	Form	Solubility: Water	Solubility: ethanol
Diazepam	Tablets, capsules, injectables	Slightly solubie	Soluble
Flunitrazepam		Sparingly soluble	Slightly solubie
Lorazepam		Insoluble	Sparingly soluble
Nitrazepam		Practically insoluble	Slightly solubie
Temazepam		Practically insoluble/very slightly solubie	Soluble/freely soluble

Table 1
PHYSICAL PROPERTIES OF SELECTED BENZODIAZEPINES AND THEIR SOLUBILITY [9-13]

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Table 2

HALF-LIFE, ONSET AND APPLIED DOSES FOR SELECTED BENZODIAZEPINES (TOXIC DOSES ARE NOT KNOWN) [9,10,14]

Compound	Onset (min)	Half-life (h)	Major metabolites	Pharmaceutical/therapeutic dose
Diazepam	30–90	20–100	Desmethyldiazepam (active); oxazepam (active); temazepam (active)	5–30 mg
Flunitrazepam	15–30	16–35	Desmethylflunitrazepam (moderately active) 7-aminoflunitrazepam (inactive)	0.5–2 mg
Lorazepam	5–30	9–24	Glucuronide conjugate of lorazepam (inactive)	1–10 mg
Nitrazepam	10–40	18–38	7-Aminonitrazepam (inactive); 7-acetoamidonitrazepam (inactive)	5–10 mg
Temazepam	20–90	8–15	Glucuronide conjugate of temazepam (inactive)	1–20 mg (insomnia); 20–40 mg (premedication)

Compound	Form	Solubility: Water	Solubility: ethanol
Amobarbital	Tablets, capsules, injectables	Very slightly solubie	Freely soluble
Barbital		Slightly solubie	Soluble
Pentobarbital		Very slightly solubie	Freely soluble
Phenobarbital		Slightly solubie	Freely soluble
Secobarbital		Very slightly solubie	Freely soluble

Table 3

PHYSICAL PROPERTIES OF SELECTED BARBITURATES AND THEIR SOLUBILITY [9,10]

Table 4

HALF-LIFE, ONSET AND APPLIED DOSES FOR SELECTED BARBITURATES (TOXIC DOSES ARE NOT KNOWN) [9,10,14,15]

Compound	Onset (min)	Half-life (h)	Major metabolites	Pharmaceutical/ therapeutic dose	Toxic
Amobarbital	10–30	8–40	30-Hydroxyamobarbital (moderately active)	30–240 mg	1,5 g (lethal)
Barbital	15–30	48	Excreted almost entirely as unchanged drug	300–600 mg	2 g (lethal)
Pentobarbital	15–60	15–50	(10S,30R)-, (10S,30S)-, (10R,30S)-, and (10R,30S)-5-ethyl-5-(30-hydroxy-10-methylbutyl)barbituric acids (relatively inactive)	100 mg (as hypnotic)	1 g (lethal)
Phenobarbital	15–4	90–100 (adults) 65-70 (children)	N-Glucopyranosylphenobarbital (inactive); 4-hydroxyphenobarbital (inactive); glucuronide conjugate of phenobarbital (inactive)	60–180 mg	1,5 g (lethal)
Secobarbital	19–34	8–15	Hydroxylation of both side-chains at the C5-position with further oxidation of the omegaposition on the butyl side-chain (inactive)	100 mg	2 g (lethal)

flunitrazepam). Toxicological data for selected benzodiazepines in presented in Table 2.

The pharmacological properties of bartiturates are similar to benzodiazepines [9]. These include confusion, memory impairment, sleepiness, sedation, impaired coordination and impaired thinking during the following the day of administration [9]. Barbiturates are found in forms of capsules, tablets and injectables [9] (Table 3).

Barbiturates' medical purposes are the treatment of insomnia, seizures in cases of epilepsy, as well as sedation [9]. Barbiturates' half-lives can vary from short-term acting of 8 hours for amobarbital, up to 100 hours for phenobarbital. The onset action of barbiturates ranges from 10 minutes to 1 hours. Toxicological data for selected benzodiazepines in presented in Table 4.

Delayed reporting of sexual assaults by the victims, with the worthlessness of collecting blood and/or urine samples for toxicological examination, the lack of accurate data on the substances used by the offender, as well as the uncertainty of the substance use included in the hospital registry, forces us to analyze the action possibility of other sedative-hypnotic drugs with intravenous intake [16-21].

Like most drugs used in DFSA, mixing benzodiazepines or barbiturates with alcohol is likely to potentiate the CNS depressant effects. In this case report, no prior or simultaneous administration of alcohol and a sedative-hypnotic substance was found, the intake of drugs being intravenous.

Cannabis is the most commonly misused substance in DFSA cases [22,23], yet in the presented scenarios, neither the respiratory nor the oral administration were invoked; the colour, odor and water insolubility reduce the adminitration posibility chosen by the aggressor [24-26]. Amphetamines and cocaine are not obvious candidates for DFSA due to stimulant properties [24].

As GHB, opioids, antihistamines and antidepressants can induce sedation they have been encountered in DFSA cases [24, 27], yet the solubility and ways of administration do not eliminate the usage possibility of these substances by the offender.

Conclusions

Finally, this report presents a rare case of DFSA. Intravenous administration without primary alcoholic ingestion distinguish this case of pro-active drug facilitated sexual assault from those presented in associated literature.

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