

Case Report

Recreational use of snake venom, an emerging trend in India – A case report and review of reports

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ABSTRACT

Adolescent substance abuse is at an all-time high these days. To get high, people have a pre-disposition to try new substances, and this experimenting leads them to try potentially lethal substances. Impulsive, novelty and adventure seekers are common characteristics of such users. We are reporting a case of snake venom abuse by snakebite in a patient with multiple substance use disorders. We discussed potential mechanisms of action, patient characteristics associated with snake venom abuse and management concerns.

Keywords: Snake venom, Recreational envenomation, Substance abuse, Neurotoxic venom

INTRODUCTION

The substance use problem affects a significant fraction of the Indian adolescent population and is a public health concern.^[1] Methylenedioxymethamphetamine, gamma-hydroxybutyrate and other new substances are becoming increasingly popular. Designer drugs, such as tyramine substitutes, ergolines and cathinine, have been reported more recently. Experimentation, exploration and behavioural influences such as peer pressure, novelty-seeking, impulsivity, pain relief, cultural beliefs, easy availability and accessibility and underlying mental conditions, could all be factors. We're reporting on a case of snake venom by snakebite, a potentially dangerous form of substance misuse. Interestingly, only in India, cases of recreational use of snake venom have been documented.^[2-7] People who abuse snake venom also try a variety of psychotropic substances before turning to snake venom.

CASE REPORT

A 19-year-old boy from a Rajasthani Marwadi nuclear family of upper socioeconomic class living in a metropolis, studied up to tenth grade, was brought to the hospital by his parents. He has been smoking cigarettes for 8 years, currently smoking about 20 cigarettes each day, and has never been abstinent. He has been drinking for 6 years, with an average consumption of 15–20 units each day, without any period of abstinent. He has been using cannabis (Ganja) thrice daily for the past 6 years regularly. Patients have also been consuming opioids, cocaine, lysergic acid diethylamide and magic mushrooms numerous times per week for the past 2 years depending on availability. He constantly desired to remain high and experimented with various local drugs, including snake venom, which was recommended to him by his pals as the ultimate high-sustaining chemical for a more extended period. After determining that it was not fatal, as many of his friends had attempted, out of curiosity,

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he obtained a snake from a different city (and the patient was unable to identify the snake). He injected chemicals into the snake as instructed and provided by friends to potentiate the effect of snake venom. Content of injection was not known to the patient. He deliberately got bitten by the snake on his tongue after smoking cannabis. He felt drowsy for a few hours before experiencing great happiness, a joyous mood and a reduced desire for sleep that lasted for a week. The patient did not feel the need to take any other medications during this time. There was no muscle paresis, diplopia or gangrene at the bite site. After 7 days, the patient was fully recovered. Since then, he has attempted snakebite several times in the past 6 months. When the information reached the parents, he was brought for treatment.

The patient has a history of migraine and family history of nicotine dependent in grandfather. His birth and childhood were uneventful. He had a childhood of sibling conflict, low academic achievement and was a high-school dropout. He had been manipulative since childhood, disobeying family and community rules. At school, he used to bully and physically assault other children. He went out late a few times and did not return home. When questioned, he would either say he was studying or dispute with them, refuse to eat for days and threaten to commit suicide. He was spotted smoking by a teacher in the tenth grade, who got into an argument with him, and he beat the teacher, resulting in his expulsion from the school. Then, he started building connections with individuals who organise rave parties, and he soon took the reins to become one of the organisers, arranging a variety of substances for the clientele. He has had unprotected sexual contact with a lot of girls at rave parties.

The physical examination was within normal limits, except for perspiration, trembling in an outstretched hand and positive tandem walking. A routine investigation was done, including HIV testing, and all results were normal. Cannabis and opioids were detected in the urine. During the mental state evaluation, insomnia, strong cravings for cigarettes and alcohol, agitated, irritated attitude, pre-occupation for consuming the drug, no perceptual anomalies, impaired judgment and Grade III insight were observed. The Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised score was 19. On the International Personality Disorder Examination, the patient displayed strong impulsive, histrionic and antisocial tendencies. The patient was admitted for further treatment and started on tab. lorazepam 8 mg in three divided doses, thiamine 200 mg/day and multivitamins.

On the 3rd day, the patient became delirious. A regular blood test and electrolyte analysis were performed on the patient, and the results were normal. The patient was given 4 mg of lorazepam IV every ½ h (a total of 16 mg) to minimise agitation and restlessness, as well as 5 mg of haloperidol IV to regulate hallucinogenic symptoms. The injection of lorazepam was changed to tablet the next day, and one-third

of the entire loading dose was given during the day and two-thirds of the dose was given at night over the next 5 days. Following that, 20% of the dose was reduced every day, and the patient improved within a week and was discharged. Multivitamins and thiamine were given for an additional 2 weeks. Motivational enhancement therapy and cognitive behaviour therapy were started with weekly follow-up.

DISCUSSION

The index case is one of those Brought by family members for the treatment and discovered to have abusing snake venom. Although there have been reports in the print media of snake venom being used recreationally at rave parties, there are few reports of snake venom being used recreationally in scientific literature. Common age group attempting this mode of abuse are adolescent and less frequently adults. They are severely dependent of multiple substances and intend to remain high most of the time. Spiny-tailed lizards burnt lizard carcasses, toxic honey, Spanish fly and cantharides are also reported to be used by them. There appears to be a method for obtaining a snakebite. Snakes are held near the head end of the snake, just distal to the lip margin, by the person in charge of snakes. A sharp slap on the snake's head with a blunt item causes it to bite. Precaution is made that the snake injects a minimal bite in the little toe or index finger for minimal envenomation, and then, he makes the snakebite in the individual's lip, tongue or ear lobes, depending on his or her wishes. Snakebites are mainly obtained from nomadic tribesmen or slum snake charmers and type of snake used are *Bungarus caeruleus* (common krait), *Naja naja* (cobra) and *Ophedrys vernalis* (green snake), rat snake and green vine. The psychotropic effect after bite varies from individuals to individuals. Increased sense of well-being, lethargy, grandiosity, blurred vision, giddiness, drowsiness, feeling of dizziness and intense persistent euphoria, intense state of arousal are all common symptoms after a snakebite.^[8]

The hypnotic and euphoric effects of potentially lethal envenomation have no simple explanation. One possibility is a dry bite, in which just a small amount of venom enters the human body, causing a psychoactive effect. According to some studies, up to 60% of all snakebites are dry.^[9] Psychotropic property of cobra venom partially resembles to the action of morphine. Reinforcement and euphoric effect after snake envenomation appears to be mediated by nicotinic acetylcholine receptors that are widely distributed in brain area (hippocampus) that concerned with rewards and enforcement behaviour. The snake venom toxin α -bungarotoxin binds to a subclass of nicotinic acetylcholine receptors and modulates neurotransmission in the brain through increased calcium permeability, resulting in raise intracellular free calcium levels.^[10,11] The snake venom α -neurotoxins may induce centrally mediated opiate-independent analgesia through cholinergic receptors, which may be involved in the euphoric

or rewarding experience of compounds in the rewards pathway.^[12,13] Furthermore, the venom on entering human blood releases active metabolites such as serotonin, bradykinin, peptides, prostaglandins and other slow-reacting substances that have different psychotropic effect such as hypnotic and sedative.^[14] However, so far, no reasonable explanation is being offered as to why there is no neurotoxic effect. Psychological explanation of euphoric effect is suggested to be due to a high expectation of rewarding experience, strong suggestion, personality traits and dangerous nature of wilfully receiving snakebites explains the reported feelings of high.^[15] One should keep in mind that the reported cases were also under the influence of another psychoactive substance, such as cannabis or heroin. Even before the snakebite, there should have been some alteration in perception, attitude and so on.^[15] There are some psychological characteristics features of subject with venom abuse. High levels of sensation seeking, low harm avoidance, impulsivity, multiple substance abuse and high levels of extraversion (representing high energy and a preference for excitement and stimulation), openness (representing openness to different experiences) and neuroticism were all found among snake venom users (especially high scores on impulsiveness).^[2,6]

There is difficulty in managing snake venom abuse/dependence, as there is currently no treatment guideline available, as to how to manage them on short-term or long-term basis. Any signs and symptoms of neurotoxic effect warrant the use of standard treatment protocol of snakebite recommended by Government of India, Ministry of Health or World Health Organization. Taking a multimodal approach while keeping in mind, a unique personality profile, multiple substance use and a severe form of dependence can be beneficial. The existence of antisocial and histrionic traits may complicate the treatment outcome. Using motivational enhancement treatment in conjunction with an elective strategy may be beneficial. The course and outcome of patients with snake venom abuse are unclear. The outcome appears to be unsatisfactory considering numerous substance use and personality factors.

CONCLUSION

New ways of misuse, including snake venom, must be recognized by physicians and practitioners. More research on snake venom abuse is needed, particularly on mechanism of action, prevention and therapeutic intervention.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no Conflicts of Interest.

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