Case Report

Snake Venom Use as a Substitute for Opioids: A Case Report and Review of Literature

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ABSTRACT

The mind-altering agents such as tobacco, cannabis, and opium have been widely used since the evolution of human being. These substances have been widely used for recreational purposes. However, derivatives from reptiles such as snakes, reptiles, and scorpions can also be used for recreational purposes and as a substitute for other substances. Their use is rare and related literature is very scanty. In this report, we present a case of snake venom abuse and review the existing literature.

Key words: *Abuse, dependence, snake venom*

INTRODUCTION

There are reports of rare and unusual addictions among drug users, such as using snake and scorpion venom and wasp stings to get high.[1-7] However, the literature with regard to use of snake venom is limited to few case reports/case series. Most of these cases have been described among patients who have been using opioids.[1,4,6,7] We present a case of snake venom use as a substitute for opioids.

CASE REPORT

A 33-year-old, male presented with history of substance use for the past 15 years. He started smoking cigarettes and taking alcohol at the age of 18 years. He became dependent on alcohol and tobacco by the age of 24 years. From the age of 25 years, in addition, he started taking opioids in the form of raw opium and puppy husk and became dependent on the same over the next 1 year. Over the years, he had been using all the substances concurrently. He had made few attempts to abstain from the substances but would experience relapse after 1–2 months. Use of substances was associated with marked psychosocial dysfunction, financial difficulties, and physical complications in the form of fatty liver. Few months before presentation to our center, he learned from his friends about the intoxicating effects of snake venom, who would also at times use snake venom as a substitute to opioids. Out of curiosity, he also tried it as a cheaper substitute for opioid and alcohol. Initially, with the help of the nomadic snake charmers, he subjected himself to the snake bite (possibly cobra,

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but patient was not sure) over his tip of the tongue. The snake bite was associated with jerky movements of the body, blurring of vision, and unresponsiveness, i.e. "blackout" as per the patient for 1 h. However, after waking up he experienced a heightened arousal and sense of well-being, which lasted for 3–4 weeks, which according to the patient was more intense that the state of high experienced till that time with any dose of alcohol or opioids. According to patient, during these 3–4 weeks, he did not have any craving for alcohol and opioids and did not consume the same. His smoking continued in the similar manner. After 3–4 weeks, the sense of well-being started to decline, he started to remain irritable, lethargic, and started having craving for drugs. Following this, he again went for a snake bite. He again had the similar experience lasting for 3–4 weeks. After this, he started indulging in the snake bite every 3–4 weeks, so as to experience the sense of well-being and high associated with the snake bite. Over the period, his use of opioids and alcohol reduced and most of use of these would be seen after 1–2 weeks of snake bite. On exploration, patient further disclosed that subjecting self to snake bite was common in his ethnic community (Northwestern part of Rajasthan, India), either as a substitute to other substances of abuse, or is used concomitantly with other substances to experience the feeling of ecstasy. According to the patient, often snake charmers give this kind of bite only to those people who are known to them and best to his knowledge no person had lost his their life after the snake bite.

At the time of presentation, he had been using puppy husk regularly, with the last intake a day before the presentation. He was detoxified using clonidine, analgesics, and benzodiazepines. Motivational enhancement therapy and relapse prevention counseling was done. He was explained about the risks associated with snake bite and potential life-threatening consequences. He remained in follow-up for the next 3 months, during which he was free of all the substances and also did not indulge in any snake bite.

DISCUSSION

There are few case reports in the literature about snake venom use. A thorough PubMed search and searching of cross references yielded four reports of use of snake venom for recreational purposes.[1,4-6] All these reports are from India [Table 1]. Most of these cases have been described in patients using opioids[1,4,6] as was seen in our patient too. The snakes used for such bites have

Table 1: Cases or snake venom abuse reported in literature

Author, years	Cases	Age (years)/sex	Primary substance of use	Site of snake bite	Reported effect of snake bite	Reason for snake bite	Description of snake bite site	Complications if any
Pradhan *et al*., 1990[1]	Case 1	35/male	Opioid	Great toe	Sleepiness	To get a high	No local tissue injury at the site of the bite	Not any
	Case 2	33/male	Opioid	Great toe	Grandiosity, a sense of well-being and happiness	"Extra kick"	Pricking sensation locally	Not any
Katshu *et al*., 2011[4]	Case 1	52/male	Alcohol and opioid	Left forearm	Dizziness and blurred vision f/b a heightened arousal, sense of well-being, more intense state of arousal	"To experience the kick"	No local tissue injury at the site of the bite apart from the bite marks	Not any
	Case 2	44/male	Opioid	Left foot	Blackout a/w a sense of well-being, lethargy, and sleepiness	"Getting high"	No local tissue injury at the site of the bite apart from the bite marks	Not any
Senthilkumaran *et al*., 2013[5]	Case 1	25/male	Nothing	Little toe or index finger, lip or tongue	Relieved of his stress and experienced euphoria	Overstress of work and decrease sleep	Did not mention	Jerky movement
	Case 2	23/male	Nothing	Little toe or index finger, lip or tongue	Sound sleep, relaxed mind, increased sexual desire	Not mentioned	Did not mention	Jerky movement
Umate *et al*., 2015[6]	Case 1	22/male	Opioid	The tongue or toes	Sleepiness, feeling of dizziness, blurred vision f/b heightened arousal and a sense of well-being	To get a high	No local tissue injury at the site of the bite	Not any
	Case 2	22/male	Opioid	The tongue	Sleepiness, feeling of drowsiness	To get a high	No local tissue injury at the site of the bite	Not any
Krishnamurthy and Braganza 2015[7]	Case 1	18/male	Opioid	The tongue	Increased sense of well-being, lethargy, blurred vision, increase sleep	To get a high	No local tissue injury at the site of the bite	Not any

been identified as cobra, krait, or green-colored snakes seen on the trees.[1,5,6] Our patient also described that the snake was possibly cobra. One of the patients, in a previous report described snake-dens, where different types of snakes are graded as mild, moderate, and severe form, based on the type of intoxication provided. The bites have been reported to be taken on the feet or tongue.[1,6] As was our patient, previously reported cases have also described the experience of snake bite to be associated with happiness, grandiosity, and excessive sleepiness.[1] In a case series from Mumbai, authors presented two cases, one of whom was administered snake venom on the tongue in a rave party.[6] Another case series from Ranchi included two patients with opioid dependence, who used snake bite as a substitute for opioids.[4] Personality features of these two patients revealed that they were high on the dimensions, i.e. neuroticism, extraversion, and openness. However, in terms of agreeableness and conscientiousness, one of the patients scored high and other scored low.[4] Some of these reports have also provided ethnography of people indulging in snake bite and these suggest that most of the people are from high socioeconomic status.[1,4-6] In most of these reports, no withdrawal symptoms were reported to be associated with snake bite; however, in occasional cases, patients developed the phenomenon of tolerance and indulged in more frequent snake bite trips.

The symptoms reported by patients in different case reports suggest the neurotoxin nature of these snake bites. It is known that some of the neurotoxins result in an analgesia, which is independent of the centrally mediated opiate-independent analgesia. Long-form of alpha-neurotoxin found in cobra venom is known to act on nicotinic acetyl choline receptors (nAChRs).[8] These possibly act through the acetylcholine receptors and can substitute morphine and mitigate opioid withdrawal.[9] This may explain the use of snake venom by patients with opioid use as was seen in our patient too. nAChRs are considered to be involved in the mesolimbic dopaminergic reward system of the brain, which may explain the high associated with the use of snake venom.[10] Lack of fatality in the reported cases may be due to the use of too little venom. However, this has not been precisely evaluated.

CONCLUSION

The review of literature suggests that occasional patients use snake venom as a substitute or additional agent to get high. Our case adds to this limited literature. Clinicians dealing with patients with substance abuse must be aware of this and should enquire from patients routinely about the use of such agents. There is a further need to study this ethnography phenomenon to understand the exact nature and impact of snake venom among people who use it for recreational purposes.

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Conflicts of interest

There are no conflicts of interest.

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