

The wolf in the skin of krait: The innocent Indian wolf snake, a case series

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ABSTRACT

Snakebite is a time-limiting, acute dreadful medical emergency. It is a preventable public health hazard often faced by rural populations in tropical and subtropical countries with heavy rainfall and humid climate. A new species of snake i.e Wolf snake (*Lycodon*) which morphologically as well as clinically, closely resembles Common Krait has been identified. We here discuss 2 cases of snake bite which were presented to our emergency department creating a diagnostic dilemma between Common Krait and Wolf Snake.

Keywords: Wolf Snake, *Lycodon* species, Common Krait, Colubrids, Anti-snake venom (ASV)

1. INTRODUCTION

Snakebite is an acute dreadful time limiting medical emergency. Snakes come in over 2000 different species, with roughly 300 of those occurring in India, 52 of which are venomous. Elapidae, Viperidae and Hydrophiinae are the three families of venomous snakes found in India. Indian Cobra, Indian Krait, Russell Viper and Saw Scaled Viper are the most prevalent Indian elapids (Alirol et al., 2010).

Kraits are most active at night and frequently bite persons lying on the floor. The lack of ASV, a defined methodology for therapy and unskilled doctors are all contributing to the high fatality rate associated with krait bites (Bawaskar, 2014). Antivenom supplies have always been a problem in India and on the other hand ASV is being wasted due to excessive dosage or use in confirmed non-venomous snake bite.

A colubrid snake species, Oriental wolf snake, is very often found in the Indo-Australian Archipelago. Wolf snake is benign to humans and it resembles Indian krait morphologically. We here discuss 2 cases who came to the department of emergency medicine with a history of bite by snake presenting as symptoms of neurotoxic snake creating a diagnostic dilemma. Snakes were brought to the Department of Emergency medicine by bystanders. A good knowledge of identification of venomous and non-venomous snakes is essential in appropriate management as well as proper utilization of resources.

2. CASE HISTORY

Case 1

A 19-year-old female presented to the emergency department with the chief complaint of a snake bite on her left foot 1 hour back following which she developed pain at the site of bite, difficulty in breathing and giddiness. On examination, the patient's airway was threatened, respiratory rate 24/min, oxygen saturation 95% on room air, pulse 120/min, BP 100/60 mmHg, Glasgow comma scale (GCS) 13/15, ptosis present, random blood sugar (RBS) 154 mg/dl. Patient's single breath count was 20 and breath holding time was 15 seconds. In anticipation of respiratory arrest, the patient was electively intubated and mechanically ventilated. Meanwhile patient's routine investigation along with coagulation profile was sent, which were within normal limits.

As we were planning to give polyvalent anti-snake venom (ASV) for betterment of the patient, a bystander brought a dead snake with them which on first impression appeared to be Indian Krait but it was a Wolf snake, as shown in Figure 1. Patient was given antibiotics and supportive care with repeated GCS and hemodynamic monitoring and was extubated on the very next day and was discharged after 4 days when she recovered completely.



Figure 1 Snake brought by the bystanders in case 1 was identified as A) Wolf Snake with B) white collar, C) thicker white bands and D) no hexagonal vertebral scales which are characteristic of Common Krait.

Case 2

A 28-year-old male was brought to the emergency department with chief complaint of a bite by a snake on his right foot half an hour back following which he developed pain at the bite location, breathing difficulty and the patient was anxious. On examination, the patient's airway was patent, respiratory rate 20 breaths per minute, saturation 98% on room air, pulse 110/min, BP 110/68 mmHg, GCS 15/15, ptosis present, RBS 178 mg/dl. Patient's single breath count was 24 and breath holding time was 20 seconds. Patient was thoroughly monitored with timely assessment of consciousness and alertness with hemodynamic values. Routine investigations with coagulation profiles were sent which were normal. Relatives accompanying the patient brought a snake which was a Wolf snake, as shown in Figure 2. Patient was managed with supportive care along with anxiolytics and assurance without using ASV and was discharged on the 3rd day after complete recovery.



Figure 2 Wolf Snake with prominent white bands and absence of hexagonal scales, in case 2.

3. DISCUSSION

A non-venomous, primarily nocturnal, oviparous colubrid snake, described first by Carolus Linnaeus in his *Systema Naturae* in 1758 belonging to the genus *Lycodon*, widespread in the Indian subcontinent (Romulus et al., 2004) commonly known as the Indian wolf snake, *Lycodon aulicus*. It has also been found in Pakistan, Nepal, Bhutan, Myanmar, Sri Lanka, Bangladesh and China, as reported in The Reptile Database (Peter Uetz, 2022). The morphology of the species was unknown and its phylogenetic position was uncertain. This species was recorded by Almora and Mukteshwar after being discovered by Wall, (1906) in Mussoorie, currently in the Indian state of Uttarakhand (Smith, 1943; Blanford, 1902). Manhas et al., (2015) found a solitary person from the Doda district of Jammu and Kashmir beyond Uttarakhand (J&K). Subsequently, Faiz et al., (2018), Jablonski et al., (2019) and Lal et al., (2019) have discovered a total of 26 specimens from the western part of Jammu and Kashmir. Santra, (2018) recorded the species from Himachal Pradesh without specifying any locality. Though these cases are mostly seen in the Northern part of India, rare cases have also been found in Maharashtra.

This non-venomous snake over the course of time developed and adapted colouration to help survival on the forest floor as well as underground (Romulus et al., 2004). Its typical colors are jet black, dark gray or reddish-brown with speckles and body covered with pale yellow or white spots and blotches (Romulus et al., 2004). A clear white band circumferencing its neck is also present. Wolf snake color patterns differ from one geographic place to the other. Wolf snakes have a slender body with length rarely more than a meter. Similar to many colubrids, wolf snakes possess true fangs near the back of their mouth which they use to inject venom into their prey. This species, on the other hand, is not particularly dangerous to humans (Romulus et al., 2004).

World health Organization (WHO) in 2019 included snake-bite envenoming in its top 20 neglected tropical disease list and provided a road map to halve the numbers of deaths and cases of serious disability by snake bite by 2030. It is estimated that India had encountered 1.2 million snakebite deaths, an average of 58,000/year from 2000 to 2019 in a national representative mortality study (Suraweera et al., 2020). India is the land of agriculture which accounts for more than 70% and snake density is higher in these farm lands which provide a great ecological food chain in these environment. Snake bite remains to be a public health issue for the rural communities and lack of knowledge on species identification, inappropriate first aid techniques and poor health care services have added up to the burden and vital time is lost when the patient reaches the care facility. Better supervision and training of caregivers are required and evidence-based data from well-designed research studies should be used to develop national guidelines.

4. CONCLUSION

In above mentioned cases, both were non venomous snake bite which were managed well without unnecessary use of anti-snake venom. Inadvertent use of anti-snake venom in non-venomous snake bite has contributed to scarcity of ASV. Wolf snake closely resembles Krait morphologically as well as clinically; however, the former is harmless to humans. Hence for proper utilization of resources with relevant and adequate patient management it is necessary to have good knowledge of venomous and non-venomous snakes.

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Other relationships

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Author Contributions

Govind Nagdev – Prime contributor: First person contacts with the case along with work up and treatment modality

Gajanan Chavan - HOD, Department of Emergency Medicine

Gaurav Sahu – Article editing and review

Kuldeep chhatbar - Article editing and review

Ethical approval

Not applicable

Informed consent

Consent was obtained from all participants in this study.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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