

AN UNUSUAL CASE REPORT OF NEUROTOXIC SNAKE BITE

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ABSTRACT

Snakes are reptiles that have existed for over 100 million years. In tropical and subtropical areas across the entire globe, snakebite envenoming affects mostly underprivileged, rural communities. There are mainly two types of snakes, which are venomous and non-venomous. Venomous snakes can be divided upon their type of venom, which can be either hemato-toxic, cytotoxic or neurotoxic. There is a term called 'BIG FOUR' which is used to refer the most commonly found venomous snakes in India, including Spectacled cobra (*Naja naja*), Saw-scaled viper (*Echis carinatus*), Russell's serpent (*Daboia russelii*) and Common krait (*Bungarus caeruleus*). The case study discussed here is of a 27-year-old male patient, bitten by common krait snake found in India. Treatment guidelines for venomous snake bites have been developed in India.

KEYWORD:- Snake Bite, Venom, Neurotoxic, *Bungarus caeruleus*.

Abbreviation: ASV: Anti-Snake Venom DNS: Dextrose Normal Saline NS: Normal Saline WHO: World Health Organisation REM:- Rapid Eye Movement.

INTRODUCTION

Snake bites poisons are common in rural areas and the incidence peaks during monsoon season in India. Prominent venomous species have been traditionally labelled as the 'big four' that includes Cobra, Krait, Russel's viper and Saw scaled viper.^[1] WHO recognizes that a number of tropical and subtropical, poverty-related diseases including snakebite envenoming, remain neglected.^[2] Kraits are elapid snakes and within the single genus *Bungarus*, 12 species are found. They are generally nocturnal, shy and non-aggressive. Bites generally occur when kraits are disturbed by sleeping humans moving, either naturally, or during REM sleep.^[3] In children, krait bites can result in long-term neuromuscular weakening, which has consequences for both acute and chronic care.⁸ Most of the death (42.60%) occurs of 11-30 years of male and females equally. In which most of the cases (59.26%) reported during monsoon season. Lower extremities were involved (62.96%). Snakes were identified in 43 cases (79.63%). In which 24.07% death was caused by common krait, which is followed by viper.^[4] Most common signs and symptoms of common krait bite are neuromuscular paralysis followed by abdominal colic, chest pain, vomiting, sweating and excessive salivation.^[5] Despite the fact that antivenom is widely used to treat neuromuscular paralysis caused by snake envenoming, no randomised

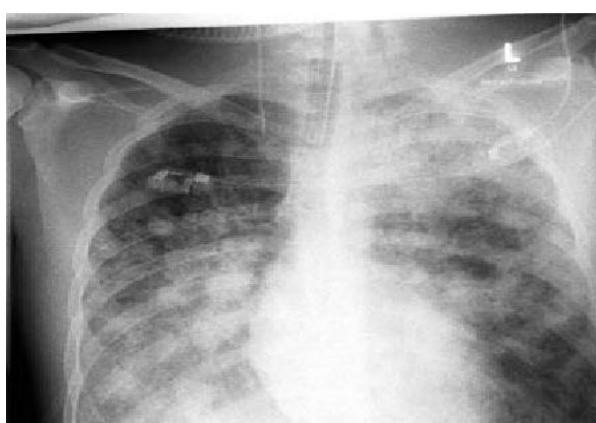
placebo-controlled clinical studies on the effectiveness of antivenom therapy in preventing or reversing neuromuscular paralysis have been done.^[9]

CASE REPORT

A 27-year-old male was bitten around right finger by common krait (*Bungarus caeruleus*; Elapidae family) while roaming near field. After some time, he noticed generalized sweating, redness and swelling in the right hand. He was rushed to hospital as he was unconscious and was not responding to verbal stimuli. He was taken to a primary healthcare centre, where he received basic medical care and got referred to our hospital for further treatment. Upon arrival at our hospital (Approximately 4hours after the bite), The patient was tachypnoeic (respiratory rate, 35/ minute), hypoxic (Peripheral room air oxygen saturation, 66%). His neurological examination revealed facial muscle paralysis and bilateral upper extremities paralysis, but he was having full strength and voluntary control of his lower extremities. He was following commands definitively with his lower extremities. Two adjunct puncture wound, were found at the index finger of right hand, along with, redness, erythema, and swelling. Initially he was kept on HFNC with 60 LPM flow, fio2 100%, He had bleeding from right finger and oral cavity, after initial resuscitation ASV was started 10 vials over 1 hour with regular vitals measurement. 20WBCT was done at 6 hourly interval which along with clinical judgement was used as guide for repetition of ASV. Following laboratory parameters were found, Blood was obtained

for laboratory analysis, and significant thrombocytopenia was found. Specifically, the following values were measured: Platelets, 73,000 per μL (reference range, 150,000– 400,000); Haemoglobin, 11.2 g/dL (Reference range, 12-17.5 g/dL); Red blood cells, 3.4 million per cubic millimeter (reference range, 4.2-6.1 million per cubic millimeter); Lymphocytes, 17% (reference range, 20-40%); Monocytes, 1% (reference range, 2-10%); Packed cell volume, 34.4% (reference range, 40-56%); Red cell distribution width, 14.6% (reference range, 11-14.6%); Aspartate transaminase, 78 IU/L (reference range, 5-40 IU/L); Alkanine phosphatase, 381 IU/L (reference range, 44-147 IU/L); Serum sodium, 130

mEq/l (reference range, 135-145 mEq/l); Lactate dehydrogenase, 805 IU/L, (reference range, 105-333 IU/L); Absolute neutrophils count, 8632 neutrophils/mcL (reference range, 1800-7800 neutrophils/mcL. On day 3 post snake bite he was intubated in view of worsening respiratory efforts and tachypnoea. ABG was suggestive of metabolic acidosis, prophylactic antibiotics were given, cxray was suggestive of bilateral diffuse infiltrates? ARDS like presentation. Lung protective ventilation was given according to ARDS.net protocol. Over a period of 3 weeks he was gradually weaned off ventilator and shifted to T piece via TT.



DISCUSSION

A 27-year-old patient presented to the hospital with the symptoms of neurotoxic snake bite. There was no history of any major medical illness. The patient was stable at the end of treatment on 21st day. Snake bite was confirmed and appropriate medication and supportive treatment was administered. During Discharge, patient was demotivated and This hints for post-traumatic stress disorder. If not treated, may develop to ophidiophobia. Patient's caregivers are also counselled regarding complication of a venomous snake bite and post-traumatic stress disorder. This has to be done to prevent the development of any phobia like 'ophidiophobia' (Extreme fear of snakes) in the patient. The follow up is advised to be done after 15 days to check for any complication, but no significant findings were noted during follow up.

Complication

Generalized neuromuscular paralysis affecting the airway and respiratory muscles, pulmonary edema, and VICC-related pulmonary haemorrhage or thrombosis are the three types of pulmonary symptoms seen in snake bites.^[6] Cardiotoxicity can result in a variety of ECG alterations, including T wave abnormalities, ST segment depression, QRS interval extension, and AV conduction problems in some snake bite instances. Hypotension, cardiac arrest, circulatory shock, and internal bleeding are the end results of these consequences, which may raise the chance of death.^[7]

CONCLUSION

Neurotoxic snakes such as common krait, when threatened or disturbed, it will attack and bite the ones who is present near. Bite of this snake is quick and painful and rate of spreading of venom is rapidly

throughout the body because it can cross phospholipid bilayers and blood-brain barrier. Patient was feeling drowsy and his eye-lids were dropped with in 25 mins of the bite and after some time neuromuscular paralysis occurs which is followed by abdominal colic, chest pain, vomiting, sweating and excessive salivation. The primary treatment has to be given as early as possible to reduced the systemic poisoning and life-threatening symptoms. Antivenom does not reverse existing neurotoxicity in snakes with predominantly pre-synaptic neurotoxins (e.g., kraits, taipans), but early delivery appears to avoid neurotoxicity or is related with a decrease in severity for some snakes.^[9] Therefore, thorough research on risks and management of snake bite is much needed to ensure well-being of patients facing these complicated comorbid conditions.

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Conflict of interest

None to be declared.

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