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A Case Report On Neurotoxic Snake Bite

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Abstract :

Snakes are reptiles that have existed for over 100 million years. They are believed to evolved from pre-historic lizards. In tropical and subtropical areas across the entire globe, snakebite envenoming affects mostly underprivileged, rural communities. There is a considerable body of evidence linking low socioeconomic position or poverty to a high rate of snakebite envenoming and fatality. There are mainly two types of snakes, which are venomous and non-venomous. Venomous snakes usually have bright colour characteristics. 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). Snakebite envenoming has a wide range of effects on their family as well as the people who are bitten and Because of exorbitant treatment expenses, lost income, and forced borrowing, it often pulls poor people further into poverty. The case study discussed here is of a 17-year-old male patient, bitten by common krait snake found in India. Treatment guidelines for venomous snake bites have been developed in India. The intention of this case report is to publish these guidelines, as the incidence of bite by common krait is rare in Vadodara, Gujarat.

Keywords : 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. Their diet consists of other snakes and it will therefore follow them into human habitancy, where the prey species are going after rodents. 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]. A retrospective study was conducted between 2004-2014 in which total 54 autopsies were represented out of 2539. 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 neuroparalysis 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].

We hereby report a case of a patient, living near Anand, Gujrat who was bitten by a common krait snake (Bungarus caeruleus).

Case report :

A 17-year-old child was bitten around 3:30 PM on 2th oct.2021 by common krait (Bungarus caeruleus; Elapidae family) while roaming near temple. The snake had bitten at his index finger in right arm, as the boy got frightened, he ran away to his home. As the incidence of snake bite is rare, common first aid was not given, and the boy went to sleep without notifying anyone in the family. After some time, when the mother returned home after working at a construction site she noticed generalized sweating, redness and swelling in the right hand. She rushed to hospital as the boy 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. Interestingly the boy was alone at his home as father is a driver of temple vehicle involving charitable work and returns home usually at night and mother was a part time worker at construction site. The boy was first noticed by his mother when she saw some abnormal generalised sweating and some redness with swelling over his right palm including fingers and wrist. She had rushed to the hospital with his fainted son who was almost unconscious and not responding to his mother's voice.

Patient was taken to the primary healthcare centre, where he received some basic medical care and was referred to our hospital in Vadodara for further assessment and treatment.

Upon arrival at our hospital (approximately 3 hours after the bite), The patient was tachypnoeic (respiratory rate, 45/ minute), hypoxic (peripheral room air oxygen saturation, 76%). 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. Following laboratory parameters were found, Blood was obtained for laboratory analysis, and significant thrombocytopenia was found. Specifically, the following values were measured: Platelets, 53,000 per μL (reference range, 150,000–400,000); Haemoglobin, 12.2 g/dL (reference range, 12-17.5 g/dL); Red blood cells, 3.9 million per cubic millimeter (reference range, 4.2-6.1 million per cubic millimeter); Lymphocytes, 18% (reference range, 20-40%); Monocytes, 1% (reference range, 2-10%); Packed cell volume, 36.4% (reference range, 40-56%); Red cell distribution width, 14.6% (reference range, 11-14.6%); Aspartate transaminase, 58 IU/L (reference range, 5-40 IU/L); Alkanine phosphatase, 361 IU/L (reference range, 44-147 IU/L); Serum sodium, 131 mEq/l (reference range, 135-145 mEq/l); Lactate dehydrogenase, 815 IU/L

(reference range, 105-333 IU/L); Absolute neutrophils count, 8632 neutrophils/mcL (reference range, 1800-7800 neutrophils/mcL.

Fig 1.1 Site of snake bite

Fig 1.2 Site of snake bite

Table: 1

Medication chart for the treatment of snake bite :

Generic name	Dose	Route	Frequency	Days given
Inj. ASV	10@ in 100 ml NS	IV	OD	1st day
Inj. Neostigmine	10 cc diluted in NS	IV	OD	1-3 days
Inj. NS	1 pint	IV	BD	1-8 days
Inj. Multivitamins + cynocobalamin	1@	IV	BD	1st day
Inj. DNS	1 pint	IV	OD	1-3 days
Inj. Pantoprazole	1@	IV	BD	1-8 days
Inj. ceftriaxone	1 gm	IV	BD	1-8 days
Inj. metronidazole	1 pint	IV	BD	1-8 days
Inj. atropine	1@	IV	TID	1-3 days
T. trypsin + chymotrypsin	1,00,000 AU	PO	TID	2-8 days
Syp. Potassium chloride	30cc	PO	TDS	4-7 days
Inj. glycopyrrolate	1@	IV	TID	4-7 Days
T. Folic acid	5 mg	PO	OD	4-8 days
Inj. ondansetron	1@	IV	TID	1-8 days

Discussion :

A 17-year-old patient presented to the hospital with the symptoms of neurotoxic snake bite. There was no history of any major medical illness. Social history revealed that patient was tobacco chewer since 18 months. The patient was stable at the end of treatment on 8th 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. The proper care of the patient is must after the discharge, which is already counselled to patient's parents. Patient's caregivers are also counselled regarding complication of a venomous snake bite and post-traumatic stress disorder. Patients caregivers has been told that if they observe any unusual behaviour regarding patient which can include lack of interest in studying or playing, fear of going out or play in open grounds, has to come to hospital for further evaluation of the condition. 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 15 mins of the bite and after some time neuroparalysis 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. The clinical data to assess the snake bite venom is still developing with new diversity of snake species found in India in different regions. 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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