



A CASE REPORT ON NEUROTOXIC SNAKE BITE WITH RESPIRATORY ARREST IN AN URBAN CITY

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ABSTRACT

Snake bite presents as a life threatening emergency and is most commonly seen in rural areas. It is a neglected tropical disease of global importance.* Data from "THE MILLION DEATHS STUDY" in India estimates that the snake bite deaths are more than 30 fold higher than that recorded in official hospital returns. Snake bites have neurotoxic, hemotoxic and myotoxic effects depending on type of envenomation. We present a case of neurotoxic snake bite in an urban city of New Delhi where snake bites are not very common. The patient, a 17 year old boy was presented to our emergency in a cyanosed ,unresponsive state with no spontaneous breathing and with a clear history of snake bite 3 hours prior to arrival. Patient's airway was immediately secured and was put on ventilator support followed by standard management of anaphylaxis and snake bite based on WHO/SEARO guidelines of snake bite. Patient recovered completely with no neurological deficit in about six days time with immediate intervention and management according to standard protocols.

KEYWORDS : Envenomation, Neurotoxic snake bite, respiratory failure, mortality, antsnake venom

INTRODUCTION

India is estimated to have the maximum snakebite mortality in the world. WHO estimates number of bites to be 83,000 out of which there are 11,000 deaths per annum.(1)

There are 236 species of snakes in India out of which about 13 are poisonous. Four out of which are considered to be the most common and called the big four-Namely, the common cobra (naja naja) scaled viper (echis carinatus) common krait (bungarus caeruleus) russels viper (dabiola russelii)(2)

King cobra and krait are the most common neurotoxic snakes in India.The krait hunts nocturnally and is very quick to bite people sleeping on the floor often without waking them up. Victims wake up later paralyzed or die in their sleep.Acute neuromuscular weakness and respiratory failure are the most morbid and clinically important neurotoxic symptoms and require immediate intervention.

Early administration of antivenom is utmost important because antivenom does not neutralize bound venom, only venom present freely in circulation.(3) Quick primary survey and simultaneous securing of airway breathing and circulation significantly reduces hypoxic insult and damage and reduces mortality

- SCALEDVIPER
- 2COMMON KRAIT
- 3COMMON COBRA
- 4RUSSEL VIPER



Figure 1



Figure 2



Figure 3



Figure 4

CASE REPORT

A seventeen year old boy was brought to the Emergency Department in early morning around 5 am with history of snake bite at home while sleeping on the floor (at around 2 am). Patient was apparently conscious 20 minutes ago when he complained of pain

in abdomen, chest tightness and difficulty in speaking and then suddenly became unconscious. He was taken to a local nursing home initially and then referred to our hospital for further management.

The child presented to ER in an unresponsive state with no spontaneous respiratory effort and cyanosis all over body. Pulses were present and pupils fixed dilated. Extremities were warm but saturations showed SpO₂ of about 40 %. Airway was immediately secured in view of poor GCS (E1V1M1) and respiratory arrest. Endotracheal intubation followed by appropriate ventilation was initiated. An immediate ABG was taken and meanwhile patient was started on IV fluids and adequate sedation.

On secondary survey, fang marks were observed on lateral side of right eye along with some periorbital edema. Bilateral air entry present after ventilation. Heart sounds were heard with no murmur. Abdomen was soft and bowel sounds present.

Neurological examination showed fixed dilated pupils, dolls eye reflex was absent and no spontaneous effort of respiration.

Initial ABG showed respiratory acidosis with metabolic component with it. Rest of the investigations were sent including 20 WBCT.

With a strong evidence of a snake bite, patient was started on ANTISNAKE VENOM immediately; initial dose of 8 vials i.e 80 ml was given in ER.

Injection hydrocortisone 100 mg and ranitidine 50 mg was also given prior to ASV.

Patient showed no neurological improvement after the first dose of ASV and hence a second dose of 100 ml was initiated at a 6 hourly basis.

During the ICU stay, patient was continuously monitored and scored on basis of envenomation severity index. Supportive management and treatment as per snake bite guidelines were followed but with no improvement. Brain stem signs were absent for about 36 hours with EEG suggestive of encephalopathy and coma. POOR PROGNOSIS was explained to the family in detail.

Neostigmine along with atropine was added in the regime as per the ASV protocol.

After which patient showed dramatic neurological improvement from day 4 with reactive pupils followed by return of corneal reflex and spontaneous eye opening. On day 5 he became conscious and could obey commands with eye movement. Gradual return of power of all four limbs and a good sensorium was achieved. He was put on a trial of tracheostomy on 6th day of admission and after its success was planned to be extubated the same evening. Patient was discharged on day 7 with no neurological deficit and in a good health with proper planned follow up after a week and regular physiotherapy.

The attendant at the day of discharge shared the picture of the dead snake that had bit the child, and was found to be common krait.

DISCUSSION

Ophitoxemia (clinical spectrum of venomous snake bite) starts with the onset of local changes within 5-8 mins of snake bite followed by a myriad of symptoms (neurological/myotoxic /hemotoxic) based on the type of envenomation.⁽⁴⁾

In an Indian study, Saravu K et al showed that hemotoxic and neurotoxic envenomations were observed in 73.86% and 19.73% of cases respectively. (5) Neurotoxic snake bite presents with onset of neurological weakness starting from 1 hour upto 10 hours. Common neurological symptoms in decreasing order of frequency in India include ptosis (85.7%), ophthalmoplegia (75%) limb

weakness (26.8%) respiratory failure (17.9%) palatal weakness and neck muscle weakness (7.1%)⁽⁶⁾

In our case, patient presented in a respiratory failure state at about 3 hours after the incident of snake bite. Patient also had a history of abdominal pain which according to a study by Kohli et al is a significant complaint in snake bite.⁽⁷⁾ Recovery from neurological weakness usually ranges from hours to weeks after administration of anti snake venom.^(8/6) Our patient started showing improvement from day 4 of initiation of therapy and by day 6 was in almost complete recovery.

A case study by Bhattacharya P et al suggested complete recovery of 12 out of 13 patients with severe neuroparalytic envenomation.⁽⁹⁾ Prompt recognition of snake bite and timely administration of antivenom is a life saving measure and is the only effective treatment. Ventilatory support forms the cornerstone of envenomation therapy. A mortality of 7.6% was observed in patients presenting in respiratory failure with a history of snake bite.⁽¹⁰⁾

Most of the fatalities are due to victims not reaching the hospital in time where definitive treatment can be given. Harmful first aid practices and lack of confidence of primary care doctors in treating snake bite has been studied on a large scale in India as one of the main causes.⁽¹¹⁾

Government of India, Health and Family Welfare Department has prepared the NATIONAL SNAKEBITE MANAGEMENT PROTOCOL to provide doctors and lay people with the best possible evidence based approach to deal with this problem in our country.⁽¹²⁾

Our patient was managed according to the basic protocol of initial management of securing the airway, breathing and treatment of shock.

Followed by administration of polyvalent antivenom along with hydrocortisone and antihistamine (prior to administration of ASV). Use of neostigmine along with anticholinergic to overcome the neuromuscular blockade.

An excellent outcome was noted and patient was discharged in good health and full neurological recovery.

This case was reported in an urban city of Delhi, more such cases occur in rural states of our country that go unreported and people die without definitive treatment and management. It is a cause of concern and more active propagation and education is required to bring down the mortality and morbidity due to snake bites in our country.

CONCLUSION

We are reporting the above case because incidence of snake bite in urban cities like New Delhi are rare but still prevalent. In case of unresponsive patients with uneventful history especially in rural areas and even urban settings the differentials should include neurotoxic snakebite as a possibility, keeping in mind an etiology prognostically so deadly which can make or break the situation for the patient and his family.

The very possibility of neurotoxic snake envenomation should be considered earliest by the point of care (POC) i.e EMERGENCY PHYSICIAN who is the axial point in managing such cases. Outcome is excellent if management is started early and before irreversible hypoxic insult. Proper cardiorespiratory support with early administration of antivenom is the mainstay of therapy.

Emphasis on regular public awareness programs regarding prevention, correct prehospital management, importance of early transfer to a hospital and proper education and boost of confidence of healthcare provider must be conducted in both urban and especially rural areas to decrease the morbidity and mortality and

increase the reporting of such cases.

Neurotoxic envenomations don't kill, negligence and insufficient confidence does.

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