

Review Article

Snake Bite in Bangladesh

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Abstract

Snake bite is a common public health problem in Bangladesh. Incidence is about 8000 per year with 20% death due to snake bite. Rapid diagnosis of acute hemorrhagic disorders, neurorespiratory, renal, and hemodynamic failure subsequent to snake bite and their rapid interventions saves life. Due to strong believes of public on traditional treatment and lacks of awareness of scientific treatment by medical professional, the patient's do not get appropriate uniform treatment. Hospital treatment based on scientific knowledge, including early administration of the appropriate dose of potent snake antivenom along with adjuvant treatment, proper care of the wound, correcting electrolyte imbalance, tissue oxygenation and maintenance of adequate nutrition may help rapid recovery. In this study, incidence of clinical effects of different types of snake bite and the management guideline for medical professionals are described.

Key words: Antisnake venom, Cobra, Krait snake bite, Viper

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Epidemiology

Snake envenoming is a disease of poverty.¹ Envenoming by poisonous animals (snakes, scorpions, wasps, ants and spiders) is an occupational hazard, often faced by farmers, plantation workers, fisherman, hunters of tropical & subtropical countries.² Open-style sleeping on floor, also expose people to bites of from nocturnal snakes in south Asia. A previous survey in Bangladesh covering a larger area conducted in 1995-1996 estimates an incidence of 4.3 per 1000,000 populations with 20% mortality rate.³ Snake bite is significantly the most important cause of envenoming.

Eventually, the reliable figures on incidence, morbidity, and mortality are scarce in our country due to poverty, inadequate healthcare facilities regarding species specific anti venom production in snake bites management. This study aims at summarizing and discussing clinical features, diagnosis and treatment of snake bites envenoming to awareness of medical personnel in Bangladesh.

Snakes in Bangladesh

There are 82 species of snakes in Bangladesh of which 28 are venomous. Most of the snakes are non-venomous, like worm snakes, pythons, wolf snakes, rat snakes etc. The major families of poisonous snakes are elapid which includes common cobra, king cobra and common krait, banded krait, viperidae (Russell's viper), Saw scalded vipers and *hydrophidae* (sea snakes).

Mode of action of venom

A pair of salivary glands secrete a powerful multipurpose enzyme fluid (venom) that flow at the time of envenoming through the channeled or grooved teeth called fangs. Most snakes inject 10% of the available venom in a single strike except the Russell's viper which injects 75% of stored venom in one single bite due to big long sharp curved fangs.⁴

Venom is a cocktail of 20 or more components including proteins, enzymes, polypeptide toxins, non-toxic nerve growth factors, hyaluronidase, metalase, lipids, free amino acids, nucleotides, carbohydrates, biogenic amines, various activators and inactivators of physiological process. Elapid venom is mainly neurotoxic and sea snake venom myotoxic.⁵

Clinical features and Diagnosis

Some people who are bitten by snakes may develop quite striking symptoms and signs, even when no venom has been injected. Anxious people may hyperventilate so that they develop pin and needle sensation in the extremities, spasm of their hands and feet and dizziness. Others may develop vasovagal shock after the bite or suspected bite with faintness and collapse with profound slowing of the heart. Others may become highly agitated and irrational and may manifest a wide range of misleading symptoms.⁶

Bite by venomous snake must leave fang marks, these are usually two but only one may be evident if the bite is sideways on. In contrast bites by non-poisonous snakes produce a characteristic U shaped set of teeth marks.⁷

Management

Regarding management, first aid is to be given at the time when bite occurs. If one can locate the bite site, remove the surface deposited venom by clean cloth or cotton, keep the extremity at approximately heart level, immediately apply a broad firm bandage on the bitten area and around the limb, with pressure equal to that one can easily put and remove the finger underneath the bandage. As much as of the limb should be bandaged as possible.^{9,10} Victims should not be allowed to walk, do not incise at the site of the bite, if the victim is found unconscious, without respiration, healthcare worker, resuscitator or anyone can start mouth-mouth breathing and others measures of resuscitation.

In Bangladesh, we have polyvalent antivenom which acts against Cobra, Common Krait, and Russel's viper. It should be given if signs of systemic poisoning (e.g. ptosis or haemorrhagic signs) develop after snake bite. Its use should be considered in all patients with extensive tissue damage because of the risk of systemic poisoning.

Anti venom accelerates dissociation of the toxin-receptors complexes and reverses the paralysis. On arrival of the patient, 100 ml (10 Vial) Anti snake venom(ASV) is added to 200 cc. of normal saline and given to the patient over 30-50 minutes. One should sit by the side of the victim for easy diagnosis and treatment of anaphylaxis. Within 30 minutes after initial dose of ASV, if there is

no improvement of neurological manifestations one can repeat the dose of ASV and no more than total 20 vials of ASV is to be administered. ASV neutralizes circulating venom only and not the toxin fixed in the tissues, the toxins action at tissue level may be antagonized by nesotigmine-atrophia therapy in case of elapid bite and heparin along with supportive fibrinogen transfusion in case of viper bite. When antivenom is not available, local infiltration of carbolic soap around the site of the bite in case of elapid snakes and heparin in case of vipers is recommended. Before discharge, envenomed victims should be closely observed daily for minimum 3-4 days.⁸

Basic cardiopulmonary resuscitation to all patients found unconscious at home and not breathing should start receiving chest compressions and mouth to mouth respiration en-route to the hospital. Endotracheal intubation and ventilation indicated if victim has pooling of saliva, unable to lift the neck from pillow, signs of respiratory failure like abdominothoracic respiration, signs of cerebral hypoxia. At the periphery, one can do endotracheal intubation, or if not possible a laryngeal mask can be put directly over larynx and ambu bag ventilation.¹⁰

Conclusion

Ultimately death by venomous snake bite makes a family economically deprived. Our researchers should make attempts to prepare venomous toxoid to immunize the risky population against venomous snake toxins. Antivenom producers should prepare a new kit for detecting venom antigen in blood and to prepare antivenom from venoms obtained from snakes caught from relevant areas of the country. As a result, the attending physician will get utmost satisfaction when the victim of snake bite recovers.

References

1. Harrison RA, Hargreaves A, Wagstaff SC, Faragher B, Laloo DG. Snake envenoming: A disease of poverty. *PloS Negl Trop Dis*. 2009; 3: 569.
2. Huq F, Islam MA, Satter MH, Chwdhury B, Ali MW, Kabir MM, et al. Epidemiology of snake bite in Bangladesh. *J Zool*. 1995; 23: 61-64.
3. Sarker MSU, Sarker NJ, Patwary MS. Epidemiology survey of snake bite incidence in Bangladesh. Report submitted to the ministry of science and technology, Bangladesh Government. 1998.
4. Warrell DA, Gutiérrez JM, Calvete JJ, Williams D. New approaches & technologies of venomics to meet the challenge of human envenoming by snakebites in India. *Indian J Med Res*. 2013; 138: 38-59.
5. Williams D, Gutiérrez JM, Harrison R, Warrell DA, White J, Winkel KD, et al. Global Snake Bite Initiative: an antidote for snake bite. *Lancet*. 2010; 375: 89-91.
6. Warrell DA. WHO/SEARO Guidelines for the clinical management of snake bites in the Southeast Asian region. Southeast Asian. *J Trop Med Public Health*. 1999; 30: 1-85.
7. Parikh CK. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology, 6th ed CBC Publishers and distributors, New Delhi:India, 2014;p.944-945.
8. Chugh KS. Snake-bite-induced acute renal failure in India. *Kidney Int*. 1989; 35: 891-907.
9. Reddy KSN. The Essentials of Forensic Medicine and Toxicology, 33rd ed Jaypee Brothers Medical Publishers Ltd, New Delhi: India, 2014;p.322-325.
10. Bawaskar HS, Bawaskar PH, Punde DP, Inamdar MK, Dongare RB, Bhoite RR. Profile of snakebite envenoming in rural Maharashtra, India. *J Assoc Physicians India*. 2008; 56: 88-95.