

Snake Bite its First Aid & Anti Snake Venom (ASV): Details Guidelines

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ABSTRACT

Snakebite is an injury caused by a bite from a snake. It can be dangerous and life threatening if the snake will venomous. India is the top country having the highest no. of death due to snake bite. Some specific venomous snake is responsible for this death. Till now people are not serious about that. Most of the people don't know just the first aid of snake bite. After a snake bite most village people are going to unqualified person and quacks for treatment not to hospital, this is one of the most serious causes of death. People should be aware about the sign and symptoms of snake bite and at least the first aid treatment of snakebite. In this type of emergency victim should be admit to nearest hospital and Anti Snake Venom (ASV) is very much necessary to save the patient life.

Keywords: Snake Bite, Anti Snake Venom, proteinuria, RBC, hemoglobinuria

INTRODUCTION

Venomous animals account for a large number of deaths and serious injuries in all over the world. Snakes alone are estimated to inflict 2.5 million venomous bites in each year, which resulting in about 125,000 deaths. But the actual number may be larger. Southeast Asia, India, Brazil, and areas of Africa have the history of large no of deaths due to only snakebite.

There are 270 species of snakes in India out of which about 60 are highly venomous. The big four dangerous snakes of India includes Indian cobra, krait, Russell's viper and Saw-scaled viper. Almost 20000 people die due to venomous snake bites every year in India.

India is estimated to have the highest snakebite mortality in the world. World Health Organization (WHO) estimates place the number of bites to be 83,000 per annum with 11,000 deaths.^[1]

Most of the fatalities are due to the victim not reaching the hospital in time where definite treatment can be administered. In addition community is also not well informed about the occupational risks and simple measures which can prevent the bite. It continues to adopt harmful first aid practices such as tourniquets, cutting and suction, etc. Studies reveal that primary care doctors do not treat snakebite patients mainly due to lack of confidence.^[2]

SIX MOST POISOINOUS SNAKE IN INDIA:

1. Indian Cobra: Indian cobra also known as "Nag". It is one of the highly venomous snake found throughout India. Indian cobras are found in many habitats but generally in open forest edges, fields, and the areas around villages.

2. Indian Krait: kraits is most dangerous venomous snake of India and one of the deadliest snakes of the world. Krait venom is

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extremely neurotoxic and induces muscle paralysis, its bite is lethal to man. There are 12 Species and 5 sub-species of Krait Snakes.

3. Russell's Viper: It is also called as koriwala. It is also one of the most venomous snake all over the India. One of the most dangerous snakes of India, with an average length of 20 cm (4 ft). The dark brown or brownish-gray deadly snake feeds on Rodents, lizards & small birds.

4. The King Cobra: King Cobra is the biggest snake in India, with an average length of 13-15 ft. The King cobras can reach upto 18 feet in length, which making them the world's longest venomous snake. The physical feature of King Cobra is olive-green, tan, or black with faint, it has pale yellow cross bands down the length of the body.

5. Indian Pit Viper: The Indian Pit Viper is generally green in colour and also known as bamboo snake. It mainly live on arboreal, living in vines, bushes and bamboos. They also have a very 'cool' heat sensing system.

6. Saw-Scaled Viper: The Indian saw-scaled viper is a small viper from one of the eight species of small viper venomous snakes family. It is a rough scaled snake with large eyes, wider head than neck and stocky body, habitat in sand, rock, soft soil and in scrub lands.^[3]

The best solution to save people in this situation of snake bite emergency is to educate people - disseminate information about snakes and snakebite - what are snakes, when and why do they bite, how to avoid getting bitten, what to do when bitten, etc. It helps to understand that:

- a) All snakes are not venomous –Every snakebite is not going to result in death.
- b) Even a venomous bite is not always fatal – because the severity of snakebite depends on many factors like the size of the snake, whether the bite could be completed, whether it was a dry bite or not.

c) First Aid would enable a person to buy more time to reach medical aid on time.

d) The only cure which is available is anti-venom serum injection.

General Symptoms occur:

Symptoms depend on the type of snake, but may include:

- a) Bleeding from wound
- b) Blurred vision
- c) Excessive sweating
- d) Loss of muscle coordination
- e) Nausea and vomiting
- f) Numbness and tingling
- g) Rapid pulse
- h) Severe pain
- i) Skin discoloration
- j) Swelling at the site of the bite
- k) Weakness

First Aid

a) Keep the person calm. Control anxiety as excitement will increase heart rate and lead to spread of venom.^[4]

b) Restrict movement, and keep the affected area below heart level to reduce the flow of venom.

c) Remove any rings or constricting items, because the affected area may swell. Create a loose splint to help restrict movement of the area.

d) Make the victim lie flat with bitten limb below the heart level.

e) If the area of the bite begins to swell and change color, the snake was probably venomous.

f) Monitor the person's vital signs as temperature, pulse, rate of breathing, and blood pressure if possible.

g) Get the victim to the nearest hospital where antivenom can be provided.

DON'T DO AFTER SNAKE BITE:

- a) Do not apply a tourniquet.^[5]

- b) Do not wash the bite site with soap or any other solution to remove the venom.
- c) Do not make cuts or incisions on or near the bitten area.^[6]
- d) Do not use electrical shock.^[7]
- e) Do not freeze or apply extreme cold to the area of bite.
- f) Do not apply any kind of potentially harmful herbal or folk remedy.
- g) Do not attempt to suck out venom with your mouth.^[8]
- h) Do not give the victim drink, alcohol or other drugs.
- i) Do not attempt to capture, handle or kill the snake and patients should not be taken to quacks.
- j) Some research which suggests that a "Pressure Pad" at the site of bite may be of benefit.^[9]

Useful Diagnosis:

- a. To check the proteinuria/ RBC/ hemoglobinuria / Myoglobinuria Urine examination can be done
- b. To check the serum creatinine/ Urea/ Potassium do Biochemistry test.
- c. To confirm snake species use full test is Enzyme-linked immunosorbent assay (ELISA)
- d. Hb/platelet count/peripheral smear prothrombin time (PT)/ activated partial thromboplastin time (APTT)/ fibrin degradation products (FDP) is also usefull to treat the patient.

Snake antivenom

Snake antivenom is a kind of therapeutic serum which at present constitutes the only effective product to treat the consequences of snakebite,

a serious public health problem in many tropical and subtropical countries. Antivenom production is a biotechnological process that involves the use of animal blood as raw material, which is processed and purified before obtaining the final product.

A purified fraction of immunoglobulin or immunoglobulin fragments fractionated from the plasma of animals that have been immunized against a snake venom or a snake venom mixture.^[10] Snake antivenom immunoglobulin (antivenoms) are the only specific treatment for envenoming by snakebites. They are produced by the fractionation of plasma usually obtained from large domestic animals hyper-immunized against relevant venoms. Important but infrequently used antivenoms may be prepared in small animals. When injected into an envenomed human patient, antivenom will neutralize any of the venoms used in its production, and in some instances will also neutralize venoms from closely related species. Anti-snake venom (ASV) is the main treatment. In India, polyvalent ASV, i.e. effective against all the four common species; Russell's viper, common cobra, common Krait and saw-scaled viper and no monovalent ASVs are available. ASV is produced both in liquid and lyophilized forms. Antivenom acts to neutralize the poisonous venom and causes the venom to be released from the receptor site. Thus, the receptor sites that were previously blocked by venom are now free to interact with the acetylcholine molecule, and normal respiration resumes. The spent antivenom and the neutralized venom are then excreted from the body.

Table:- Doses of Anti Snake Venom^[4]

Mild envenomation neurotoxic/hemotoxic	systemic symptoms manifest > 3 hours after bite	8-10 Vials(Each vial contain 10mi)
Severe envenomation neurotoxic or hemotoxic	systemic symptoms manifest < 3 hours after bite	8 Vials(Each vial contain 10mi)

- a) ASV should introduce 2ml/min rate as slow intravenous (IV) injection.
- b) ASV should introduce continuous 1 hour in same rate
- c) Patient should be keep in monitoring for 2 hours after ASV injection.
- d) ASV should not be administered locally at the biting site.

CONCLUSION

As a common man, one should know how to administer proper first-aid to a snakebite victim, without losing precious time. It is not important to assess whether it was venomous snakebite or not at the time of emergency. Then victim should be treated as venomous snakebite, as some snake venom (like that of common krait) does not show any immediate symptoms even in the case of a serious bite. It should kept in mind that no attempt should be made to kill the snake to carry it along to the hospital. Anti-snake venom is the only treatment in such cases.

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