Editorial

Snake Bite — An Emergency Shrouded in Myths

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Snake bite has been categorized as a Neglected Tropical Disease by the World Health Organization (2009) despite an estimated number of 5.4 million incidents happening every year in tropical and subtropical regions. Annual Snakebite death rate in India is around 4.1/100,000, with increased figures in rural areas even though this can be easily prevented by timely and accurate intervention.

Unfortunately only 22.19% of the snakebite victims are taken to healthcare facilities and 20.25% of them seek medical help after consulting the traditional healer.

Though it is a life threatening medical emergency, **management of snake bite is hindered and often delayed due to misconceptions, myths and beliefs in age old traditional therapies**

There are some clinical pearls to be borne in mind —

(1) All snake bites are not venomous

Snake bites cause unprecedented panic as all bites are initially thought to be poisonous.

However, it should be kept in mind that out of the 300 species of snakes found in India only 52 are venomous. Only 30% bites are by venomous snakes. Sometimes venom may not even be injected into bites, a phenomenon called called dry bite. (50%). Sore-assurance of the victim is warranted in most cases, that most snake bites are harmless.

(2) Fang Marks do not say it all

Though we look for obvious evidence of a snakebite by fang puncture marks, Fang mark or their patterns give **no clue** whether the species was venomous or not, the amount of venom injected, severity of systemic poisoning or nature of envenomaton – hematotoxic or neurotoxic.

Kraitbite does not produce fangmarks.

(3) All symptoms are not due to envenomation

Sometimes panic and sympathetic overactivity can manifest as palpitations, sweating, tremulousness, tachycardia, tachypnoea, elevated blood pressure, cold extremities dilated pupils and paraesthesia.

Kraitbites are common at night, biting a person asleep on the ground. Maximum Viper and Cobra bites occur during the day or dawn, while

walking bare foot in overgrown grass or crops.

(4) The markers of envenomation should not be missed –

Local signs –

These are commonest in Russel's viper bite but may be present in other viperine bites.

Swelling, bleeding, blisters, and necrosis are the hallmarks. It is considered significant when it involves **more than half of the bitten limb or show rapid progression in severity.**

Pain at bite site and on passive movement with severe swelling along with absence of peripheral pulses and hypoesthesia helps to diagnose compartment syndrome.

Tender enlargement of local draining lymph node may accompany.

Systemic signs –

(a) neuroparalytic features – ptosis, diplopia, dysphonia, dysarthria, dyspnoea, dysphagia. Ptosis (drooping of eyelids) occurs first while Dyspnoea (breathlessness) and Dysphagia occur last. This is followed by descending muscular paralysis.

Neuroparalytic snakebite patients present within 6 hours in case of Cobra bite and upto 24 hours for Krait bite; however, ptosis in Krait bite has been documented after 36 hours even.

(b) Hematotoxic effects – Visible bleeding from gums or orifices, subconjunctival hemorrhages, continuous bleeding from the bite site. Intra-cranial bleeding with unequal pupils and gastro-intestinal or retroperitoneal bleeding with abdominal tenderness should not be missed.

(c) Cardiovascular abnormalities – hypotension, shock, cardiac arrhythmia, abnormal ECG.

(5) Impending respiratory failure should be meticulously excluded -

(a) Single breath count – number of digits counted in one exhalation - >30 is considered normal

(b) Breath holding time – breath held in inspiration – normal > 45 sec

(c) Completion of a sentence in one breath.

(d) Diminished or absent deep tendon reflexes

(e) Head lag due to neck muscle weakness.

(6) Management Issues -

Tourniquets should NOT be tied

Blood supply may get obstructed leading to gangrene. Any constricting clothing or jewellery should be removed for the same reason when edema increases.

The limb may be immobilized with bandages or cloth to hold a splint, but not to apply too much pressure.

Care must be taken when removing tight tourniquets as sudden removal can lead to a massive influx of venom leading to paralysis and hypotension due to vasodilatation. **Before removal of the tourniquet, the presence of a pulse distal to the tourniquet is felt. If it is occluded, then a blood pressure cuff can be applied to reduce the pressure slowly.**

Sucking / washing / electrocuting the wound of snakebite does not prevent envenomation.

Wound is not to be washed or interfered with by any procedures or chemicals as this may lead to infection, bleeding or increased absorption of the venom.

(7) Traditional first aid methods and herbal therapy have no role and do more harm.

Immediately after providing first aid, patient is to be transferred to a health facility where Anti-snake Venom (ASV) is available with provision for close observation, basic laboratory investigation and definite treatment.

Urgent transportation of the patient to medical facility by carrying is of utmost importance.

Any vehicle, ambulance, boat, bicycle, motorbike, stretcher is suitable.

(8) Species Identification is not mandatory.

No, the clinical manifestations of the patient may not correlate with the species of snake brought – attempt to kill or catch the snake may be dangerous. **Treatment with ASV depends on signs of envenomation and WBCT 20.**

(9) The Differential diagnosis of snakebite like krait

Early morning symptoms of acute pain abdomen without neuroparalysis can be mistaken for acute abdomen due to appendicitis, cholecystitis pancreatitis etc. If neuroparalysis is present stroke, GB syndrome, myasthenia gravis and hysteria are the differentials. Neurotoxicity leads to descending paralysis in contrast to GB syndrome where it is ascending.

(10) ASV is not effective against all venomous snakes

In India only polyvalent ASV is available, it is effective against all the four common species; Russells viper, Common Cobra, Common Krait and Saw Scaled viper.

It is documented that known species such as the Hump-nosed pitviper, Malabar pit viper, also Sochurek's Saw Scaled Viper in Rajasthan, and Kalach in West Bengal polyvalent ASV is not very effective.

(11) Follow Protocol on admission

All victims of snakebite confirmed or suspected are to be kept under observation for 24 hours. Observation for signs of envenomation and Consumptive coagulopathy detectable by 20 minutes Whole Blood clotting test (20WBCT). ASV therapy is to be instituted where there is evidence of envenomation. **NOT** to apply or inject Anti-snake Venom (ASV) locally.

(12) Monitoring the patient is of prime significance

– To check for the following: Pulse rate, respiratory rate, blood pressure and 20 WBCT hourly for initial 3 hours and every 4 hours for remaining 24 hours.

(13) An ASV test dose is not to be given

Skin/conjunctival hypersensitivity testing is not recommended. These reactions cannot predict future adverse events. They activate Complement to pre-sensitize the patient. They may predispose to future hypersensitivity events.

(14) Dosage of ASV in children and pregnant women -

ASV dosage is identical for Children, pregnant women and adults. As snakes inject similar quantity of venom into adults and children the neutralizing dose is same.

In this issue a peripheral hospital based study has been published comprising 201 patients with signs of envenomation. Majority of victims hailed from rural areas (88.6%), active males in the 31-50 years age group. There was a seasonal preponderance and local pain (82.1%) and swelling (81.1%) were the commonest presentations far exceeding ptosis (22.4%) and hematuria (18.4%). The mortality rate was 4.5% and **mean bite to hospital admission time was the most important determinant for survival.**

Thus, snake bite is a life threatening health hazard that needs public awareness and prompt intervention in a healthcare facility. If properly managed without prejudice morbidity and mortality can be significantly reduced.

Further Readings

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