



SNAKE BITE MANAGEMENT: AN OVERVIEW

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ABSTRACT

Ayurveda has its own way of approach towards the management of visha, which is unique and is parlance with the concepts of current science. Snakebite remains an underestimated cause of accidental death in India. Estimates of snakebite mortality in India vary from approximately 1,300 to 50,000 annually. Considering this, The World Health Organization added snakebite to their list of neglected tropical diseases and designed an exclusive protocol its management. Acharya Charaka advocated 24 upakramas to counter the cases of poisoning, which can be categorized into different sets of sub divisions for easy and scientific understanding. Among these, 'Mantra' is emphasized as par excellence. In the current attempt, efforts were made to provide certain justifications to these classical remedial measures with special emphasis on the measures that restrict the entry of poison into systemic circulation.

KEYWORDS: Ayurveda, Mantra Chikitsa, Poisoning, Upakrama, Sarpa visha, Snakebite

INTRODUCTION

Snakes are distributed common emergency¹. India is such a country, where snakebite is very common emergency. It has reported that there are only 52 venomous snakes out of 216 species in India². Yet, every year 50,000 Indians mostly poor villagers, die in 250,000 incidents of snakebite³. With high incidences in the states of Tamil Nadu, West Bengal, Maharashtra, Uttar Pradesh, and Kerala⁴. Five families of poisonous snakes viz. Colubridae, Elapidae, Hydrophidae, Viperidae and Ataspidae⁵ have been identified in India. Commonly the Indian cobra (*Naja naja*), Common krait (*Bungarus caeruleus*), Russell's viper (*Daboia russelii*) and Saw scaled viper (*Echis carinatus*) are the four venomous snakes found in India. Romulus Whitaker called them the "Big Four" which are mainly responsible for Indian snake bite mortality⁶.

Description of snakes

Descriptions on different types of snakes, their respective characters along with nature of poisoning, treatment modalities etc. have been categorically emphasized in Ayurvedic classics.

Acharya Sushruta described four types of snake bites as⁷:

1. Sarpita- Inflamed deep wound, blackish in colour.
2. Radita - Superficial wound, red or bluish in colour. This bite is considered as less poisonous.
3. Nirvisha- Nonpoisonous bite. May be a dry bite. Signs of inflammation cannot be observed.
4. Sarpangabhithata- Actual bite will not take place in this type.

Symptoms of snake bite

Accidental contact with snake will lead to the manifestation of symptoms like Local inflammation (shopha) etc. This kind of manifestation has been explained by Charaka⁸ as 'shanka visha' (suspicious poisoning), which manifests because of fearful complex.

Categories of bite

Acharya Vagbhata categorized the bites in to two⁹ viz. Savisha (poisonous) and Nirvisha (non poisonous). This classification is similar with that of modern classification, which categorized the snake bites in to two viz. Dry and Wet bites.

Dry bite (type 1): A kind of bite, where no or minimal venom is injected. It occurs in between 25%-50% of snake bites¹⁰. These bites occur as matter of defence or to give warning signals. The intension of snake in this situation is basically to escape hence, a small or no amount of poison will be injected through such bites.

Wet bite (type 2): These are the actual poisonous bites. If the victim comes across with a ferocious snake, which is hungry and behind its prey; such bites will be more poisonous as bulk amount of toxin enters into the systemic circulation. As per the available statistical data, such bites are very less in number.

Treatment Modalities

WHO provided a protocol for snakebite treatment in 2005¹¹ and emphasized the first aid measures as following:

- Reassure the victim who may be very anxious.
- Immobilize the bitten limb with the splint or sling (any movement or muscular contraction increases the absorption of venom into the blood stream and lymphatic circulation)
- Avoid any interference with the wound as this may introduce infection, increase absorption of venom and increase local bleeding.

Treatment in Ayurveda has been categorized in to 'Chaturvimshati upakramas' by Acharya Charaka¹² (Table 1). In this context, the seer mentions not to follow all these 24 modalities in all cases of poisonings. One has to examine and decide the procedure justifiable for that specific condition¹³. Based on the probable purpose of the treatment, these Upakramas can be grouped in to five sets of sub- divisions (Table 2).

It has been specified by Charaka that "without entering in the blood stream, poison cannot damage the tissues"¹⁴. Similar concepts have been expressed by Vagbhata, who says that "poison cannot damage the tissue without entering into the blood. Even an atom of poison can spread all over the body along with blood and can damage the system"¹⁵. Considering these; priority has been given by the seers towards preventing the entry of poison in to the systemic circulation.

In addition Mantra has been exclusively emphasized by Charaka and preferred to be followed immediately after the suspected cases of poisonings.

Mantra

Chakrapani prefers Mantra as foremost and par excellence upakrama among others, which nullifies the poison without fail¹⁶. Charaka¹⁷ further says that, Mantra occludes the blood vessels, prevents the entry of poison in to the systemic circulation and protects from further infections too.

Table 1: Chaturvimshati Upakramas

Treatment Measure	Probable comparison
Mantram	Chanting Mantras
Arishta bandhanam	Application of Tourniquet
Utkartanam	Incision over the bite excluding the vital points
Nishpeedanam	Compression
Achushanam	Sucking through the site
Agni	Thermal cauterization
Parishekam	Sprinkling water
Avagaham	Water bath
Rakta mokshana	Blood letting
Vamanam	Emesis
Virekam	Purgation
Upadhanam	Medication on incised scalp
Hrudayavaranam	Protection of heart
Anjanam	Medicated collyrium
Nasyam	Medicated nasal insufflations
Dhumam	Medicated smoking
Leham	Medicated linctuses
Aushadham	Anti-poisonous drugs
Pradhanam	Medicated snuffing
Pratisaranam	Local applications
Prativisham	Specific antidotes
Sajna Samstapanam	Resuscitation
Lepam	Application of medicated pastes
Mruta Sanjeevanam	Revivation

Table 2: Subdivisions of Chaturvimshati Upakramas

Purpose	Upakrama	Total Upakramas
The measure that restricts the entry of the poison in to the systemic circulation	2-8, 23	8
Elimination therapy	9,10,11,15,16,19	6
Supportive, Symptomatic treatment	13,22,24	3
Counteracting Medications/ Antidotes, etc	1,17,18,21	4
Topical applications	12,14,20	3
	Total	24

Table 3: Probable mode of action chanting Mantra

Mode of action	Probable comparison
Dhamani Bandha	Occlusion of blood vessels
Avamarjana	Downward movement of the poison
Atma Raksha	Protection from further infections

Chanting of Mantras is a specific rhythm builds confidence in victim and helps in relieving anxiety¹⁸. They stimulate Sympathetic Nervous System and strengthen the peripheral blood vessels, which helps in maintaining the normal blood flow to the vital organs. Thus Mantra have a vital role in reassuring the victim.

Arishta Bandhana

Chakrapani prefers to apply tourniquet, before entering of the poison in to the systemic circulation¹⁹. Vagbhata says that, the blood vessels cannot carry the poison, if tourniquet is applied properly²⁰. Sushruta categorized tourniquet into two as below²¹.

- Mantra Arista – Amulet impregnated with Mantra
- Mantra Rahita Arista – Actual Tourniquet

Mantra Arista will be beneficial in boosting the confidence if the individual and works in the similar ways of mantras.

Sushruta goes on emphasizing the method of application and says that, it should be applied four inches above the site of the bite²².

Sushruta further stresses on the precautions to be observed during the procedure. Bandana with Arista should not be too tight or loose. He prefers not to apply much pressure. Applying tourniquet with greater pressure for longer duration occlude underlying main vessels arteries, lymph and nerves, which further interferes the circulation and nerve impulses.

This result in Shoona Gatrata (numbness) and Putti Klinna Mamsa (Gangrene formation)²³. This concept is well accepted even by the modern medical science.

Utkartana, Nishpidana and Chushana

These modalities are under debate. With an intension to prevent further damage to the underlying soft tissue and other structures like nerves, blood vessels etc²⁴. These procedures are beneficial where medical facilities are far away and specific antivenom is not available. Acharya Sushruta says that, if no treatment is given for poisoning, that poison will kill the victim within 2-3 hours (Muhurta)²⁵ Vagbhata says that, the poison will stay at the site of the bite at least for 100 Matra kala and hence proper local measures are to be taken to eliminate the poison from the site of the bite and its spreading into the system²⁶. Charaka advocates incision over the bite (excluding the vital points), compression and sucking with taking proper care. The seer advocates to keep flour of Yava or cloth or little amount of mud on oral cavity prior to sucking the poison from the site of the bite²⁷. This may be a kind of precautionary measures, which prevents the contact of poison with oral mucosa. Special instrument like Shringa were also preferred for this purpose, which are comparatively safer.

Parisheka, Avagaha and Lepa

After proper elimination of poison, the incised area is to be cleaned thoroughly and medicated pastes are to applied. For these purposes, the drugs and other liquids which are sheeta (cool) in nature have been preferred²⁸. The cold character of the drug helps in further infections in wound, also helps in contraction of local blood vessels, preventing further spread of remaining poison if any at the site.

CONCLUSION

The upakramas have their own significance in neutralizing the poison in different ways. Though there is certain ambiguity in the approach as compared to the modern medical science; the treatment modalities emphasized in Ayurveda have a great significance and are valuable particularly in remote areas, where medical facilities are meager.

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