



A SURVEY ON TRADITIONAL EMERGENCY MANAGEMENT OF SNAKE BITE CASES IN HASSAN DISTRICT OF KARNATAKA

Ayurveda

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ABSTRACT

Background: Snake bite is one among the most neglected disease in rural area. WHO recommends monospecific anti-snake venom for the effective management of snake bite. Polyvalent anti-snake venom available in India is having the issues like species specificity, difficulty in availability, affordability and ideal storage condition. Traditional practitioners do cure snake envenomation also, even though it's not recognized by modern medicine. These medicines are neither studied nor tested scientifically till now and there is no documentation of traditional practices on snake bite management in Hassan district. There is an urgent need to document and conserve this priceless oral knowledge as early as possible so that it can be utilized by the society as an alternative/complementary in first aid management of snake bite especially in rural area. **Methods:** Systematic approach for data collection from traditional practitioners as per the WHO standard guidelines for documentation of Traditional Knowledge was followed. Semi structured open-ended questionnaire was adopted for collecting the data from traditional practitioners. The collected data was analyzed by systematic content analysis. **Results:** Totally Nineteen drugs were used in the emergency management of snake bite victims. These nineteen drugs belonged to fourteen different families; whole plant and leaves were used by 31.5% of the traditional practitioners. **Conclusion:** As a whole Hassan district traditional practitioner's knowledge in treating snake bite was explored. This helped in the conservation of ancient wisdom which is at the verge of extinction.

KEYWORDS

Ayurveda, Hassan District, Snake bite, Traditional medicine

INTRODUCTION

Snake bite is one among the neglected tropical disease according to World Health Organization.¹ The tragedy of injury, disability and death caused by snake bite remains unrecognized and unheard by global community. Due to inadequate health care facilities especially in rural areas of India people largely depend on alternative treatment by traditional healers. WHO recommends mono specific anti-snake venom for the effective management of snake bite.² Polyvalent anti-snake venom available in India is having the issues like species specificity, difficulty in availability, affordability and ideal storage condition.³ According to World Health Organization, 80% of total population of the world depends on traditional medicines for their primary health care.⁴ Traditional practitioners do cure snake envenomation also, even though it's not recognized by modern medicine.⁵ Even today there are many people who are effectively practicing snake bite cases with herbal medicines and certain traditional practices. So an attempt was made to document this age old oral knowledge which can be utilized by the society as an alternative/complementary in first aid management of snake bite especially in rural area.

METHODS

Description of the study area:

Karnataka is the seventh largest state in India situated approximately between 11.5° North and 18.5° North latitudes and 74° East and 78.5° East longitudes.⁶ Hassan district is situated in the South Western part of Karnataka State, India, lying between 12° 13' and 13° 33' North latitudes and 75° 33' and 76° 38' East longitudes, Hassan district has a total area of 6826.15 Sq. Kms.⁷

Study Design

The purposive sampling method with Semi structured interview and open ended questions was adopted in this study to obtain necessary data.

Data collection

The details of the traditional snake bite practitioners were collected as per the practices of WHO standard guidelines for documentation of Traditional Knowledge. Information regarding Traditional snake bite practitioners was obtained from various sources like Shree Kshetra Dharmasthala Rural Development project employees, patients visiting SDM college of Ayurveda Hospital, Hassan, Staff of Primary health centers, School teachers and the villagers. The study included eight geographical taluks of Hassan district. The information about the management of snake bite cases in a specially designed questionnaire with the consent in local language (Kannada). its local name, used part

of the plant, mode of administration and precaution to be taken during medication period were collected.

Taxonomic identification

The plants were identified by the professional experts and the organoleptic studies of the plants were conducted by a Botanist, Professor and Head of the department of Botany, Government Science College Hassan.

RESULTS

There is a belief among traditional practitioners that the knowledge of emergency management should be shared only with their own family members but not with outsiders. Few traditional practitioners were of the opinion that the power of medicines reduces if they disclose it. It was a real challenge to explore the treatment methodology they used to follow. Among the survey conducted only five traditional practitioners were ready to reveal immediate management of snake bite victims. All of them were using fresh herbs and it has to be chewed until the symptoms of snake bite reduce.

Totally Nineteen drugs were used in the emergency management of snake bite among them ten were used internally and Nine were used externally. Among ten internal drugs five were single drugs, three were in combination of two. Apart from this there were practitioners who were using poison stone and a special type of snake gems in immediate management on the bite site to absorb the venom. Apart from these one of the practitioners used bronze to neutralize the cobra venom. Three bronze pots were kept one above the other on the head of the patient and filled with boiling water. Once the colour of water changes to green colour it was removed. Among nine drugs used externally five were single herbs and rest were combination of four. All these single drugs are used in all types of snake bite irrespective of the species except *Ricinus communis* which is used with buttermilk only in Viper bite cases.

All these practitioners gave the importance for diet also while consuming these medicines. These nineteen drugs belonged to fourteen different families; three drugs belonged to *Solanaceae*, two drugs each to *Acanthaceae*, *Asclepiadaceae* and *Piperaceae* families. Among the parts used 31.5% were leaves and whole plant and rest were 5%. According to the traditional practitioners the symptoms of snake bite will be arrested at the same level once the snake bite victim starts to chew the indicated medicines. Leaves of *Nicotiana Tobaccum* and *Pergularia extensa* causes vomiting by chewing it but it has to be chewed again after vomiting until the symptoms of snake bite is controlled.

Table No.1 Internal Medication

Sl No	Biological Names	Local name	Family	Part Used	Method of administration
1	Pergulari extensa	Haalu koratige	Asclepiadaceae	Leaf	Fresh Leaves were chewed .
2	Aristolochia indica	Eshwari	Aristolochiaceae	Whole plant	Any part of the plant should be chewed continuously.
3	Nicotiana tobaccum	Hogesoppu	Solanaceae	Leaf	10 grams of leaf powder was mixed with 50ml of water and taken internally.
4	Andrographis serpyllifolia	Saradali	Acanthaceae	Whole plant	Chewing.
5	Piper betel	Veelyadele	Piperaceae	Leaf	Fresh leaves chewed along with bark of <i>Tinospora cordifolia</i> .
6	Leucas aspera	Olle tumbe	Lamiaceae	Whole plant	Fresh leaves chewed with <i>Adathoda vasica</i> .
7	Adathoda vasica	Aadusoge	Acanthaceae	Leaf	Fresh leaves were chewed with <i>Mimosa pudica</i> or <i>Leucas aspera</i>
8	Mimosa pudica	Muttidare muni	Mimosaceae	Leaf	Fresh leaves were chewed with <i>Adathoda vasica</i>
9	Ricinus communis	Haralu	Euphorbiaceae	Bark	Paste of the bark was given internally with Buttermilk
10	Tinospora cordifolia	Amritha	Menispermaceae	Stem	Chewed with Piper betel

Table No. 2 External management

Sl.No	Biological Names	Local name	Family	Part Used	Method of administration
1	Citrus aurantifolia	Nimbe	Rutaceae	Fruit juice	For washing the bite site
2	Pongamia glabra	Honge	Fabaceae	Root latex	It was sprinkled on the bite site and covered with a cotton cloth. Latex was further dropped once in 3hrs until the ulcer gets healed
3	Datura metal	Ummatti	Solanaceae	Leaf	Paste of the leaves were applied on the bite site.
4	Allium sativum	Bellulli	Liliaceae	Bulb	Fresh pastes of all these drugs were used for external application.
5	Piper nigrum	Karimenu	Piperaceae	Fruit	
6	Solanum xanthocarpum	Nelagulla	Solanaceae	Whole plant	
7	Sida acuta	Bheemana kaddi	Malvaceae	Whole plant	

8	Tamarindus indica	Hunase	Caesalpiniaceae	Leaf	Leaves decoction was used for irrigation of the bite site and leaves paste was used for external application
9	Calotropis procera	Yakka	Asclepiadaceae	Latex	Latex of the plant was applied on the bite site in case of krait bite

DISCUSSION

A humble effort was made to explore the hidden treasure of various medicinally effective herbs in the emergency management of snake bite. It has been successfully practiced since many generations in the villages of *Hassan* District of *Karnataka*. Standard snake bite treatment guidelines of World Health Organization⁸ and Ministry of Health and Family welfare Government of India⁹ say that "traditional remedies have no proven benefit in treating snake bite cases and they do more harm than good" Snakebite cases existed even before WHO and people used to survive even after a bite. Today also it is observed that large number of snakebite cases occurring in the rural areas are surviving. Even though all cases are not venomous but chances of venomous bite cannot be ignored. Unfortunately, the drugs which were practiced since generations have not been documented and hence it was discarded as useless. Interestingly the drugs mentioned in the above list are not only practiced in *Hassan* District of *Karnataka* but also in different parts of *India* and abroad. For example, thirty-two types of drugs are used in *Chittoor* district of *Andhra Pradesh* state in *India* for snake bite management.¹⁰ A survey done by *Manali Sughosh Upasani* says that there are five hundred twenty-three varieties of drugs in *India* which are said to be effective against snake venom.¹¹ The countries like *Nigeria*, *Uganda*, *Burma*, *Srilanka*, *Bangladesh* also use traditional medicines and practices in the management of snakebite cases. Many of these drugs are proved to its pharmacological action against snake venom. Methanolic extracts of 0.14mg of *Aristolochia indica* plant extract completely neutralized the lethal activity of 2LD50 of *D.russelli* venom. The pharmacological activities including edema, haemorrhagic, coagulant, fibrinolytic and phospholipase activities were significantly neutralized.¹²

Methanol extract of Bulb of *Allium Sativum* proved its cardioprotective activity on creatine kinase iso enzyme levels to neutralize snake venoms. They stabilized human red blood corpuscles membrane (antihemolytic) against *N. Naja karachiensis* venom. It also neutralized the anticoagulant effect induced by weak PLA2 enzymes in *N. Naja karachiensis* venom.¹³ *Citrus limon* neutralized the anticoagulant effect induced by weak PLA2 enzymes in *N. Najakarachiensis* venom.¹⁴ It is proved that *Tamarindus indicus* seed extract neutralizes the lethal action if it is mixed with Russels Viper Venom before injection and by local infiltration it can prolong the time of death. The seed extract inhibited the PLA2, protease, hyaluronidase, L-amino acid oxidase and 5' nucleotidase enzyme activities. The extract also neutralized the degradation of the beta chain of the human fibrinogen and indirect hemolysis caused by venom.¹⁵ One more study has proved that *Tamarindus indicus* seed extract contains metabolites that are potent inhibitors of hydrolytic enzymes and toxic components of *Vipera russelli* venom.¹⁶ Apart from these one of the practitioners used bronze to neutralize the cobra venom¹⁷. The scientific validation of specific gems and poison stone used by the traditional practitioners in treating snake bite cases is the need of hour. An observation says that as the snake bite practitioners die, much of the knowledge they possess die too along with them. So, there is an urgent need to conserve the age-old tradition of diagnosis and various practices which are facing the threat of extinction. A traditional practitioner named Mr *Ramanna* of *Paalya* village in *Hassan* district who was one among the resource persons of the present study left his body recently.¹⁸ None of the family members learnt the traditional management of snake bite from him and the total knowledge is lost. This study brought up the safe, effective, easily available, less itrogenic and cost effective herbs which can be used in the emergency management of the snake bite. This knowledge can be used for formulating new and effective formulations for snake bite.

CONCLUSION

The traditional approach employed in the management of snake bite cases in *Hassan* District of *Karnataka* was explored and documented. Scientific validation of the methods adopted and drugs used in

emergency management is the need of the hour to uplift the rich traditional heritage in the field of medicine.

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Conflict Of Interest: Intellectual property rights disclosed

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