Review on traditional diagnosis and management of snakebite in Ayurveda

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ABSTRACT

Toxicology started right from the prehistoric era when man lived in caves of forests. Reptiles originated nearly 240 million years ago, but man was born only nearly about 4 million years back. A man had to survive; he had to fight against many odds. Snake venom is one of these odds, and treatment of poisonous would have started with the first affliction by poison on man. It is believed that in India, about 2 million people are bitten by snakes annually of which 15,000 to 30000 cases prove fatal. The problem became more after urbanization and deforestation. In the early decades of the 19th century, it has been recorded by the scholars that the mortality rate in snakebite victims was higher chiefly in rural India by the unavailability of emergency medicines and poor transportation facilities. Still, recently this has been changed significantly by providing ASV (anti snake venom) as a primary treatment through hospitals of tertiary levels. Traditional poisoning healing system was also parallel to this in rural areas of south India, especially in the state of Kerala, belief in the Traditional poisoning healing system were the main motives for it. Here an attempt has been made to explore the Traditional Visha chikitsa Sampradaya of Kerala, which is quite different from classical Granthas of Ayurveda (textbook) such as Bruhatrayees along with mainly used formulations in Visha chikitsa.

INTRODUCTION

Ayurveda, one of the ancient sciences of life, is practiced for attaining complete health. It is not merely a kind of antiquated medicine. It is a science-based upon the observation of living beings and their actual responses and reactions to their environment. The use of poison has been recorded in ancient Ayurvedic classic since long ago, and preparation made out of those poisonous drugs has shown miraculous effects in various diseases. Agadatantra is the branch that invariably demands practical training more than any other branches of Ayurveda that it has to deal with fatal cases and emergency management. Agada yogas (antitoxic formulations) are those formulations which counteract the prejudicial actions of Visha over the human body.

The traditional medical system of India or Ayurveda has eight clinical branches (ashtanga). Therapeutics of poisonings (vishacikitsa) or toxicology (Agadatantra) is one of the eight clinical branches. This branch has been developed mostly in Kerala by native practitioners of poison-healing
(Vishavaidyas) to meet the needs of patients of poisoning by venomous animals and plants. In other words, the native practitioners of poison-healing in Kerala have evolved this particular branch with their original knowledge and skills in the framework of Ayurveda. The practitioners of this branch have dealt with almost all kinds of common poisonings. The native practitioners in Kerala have put their expert knowledge down in writings mainly in the Malayalam language. There seems to have been some schools of a traditional poison-healing system in Kerala, and these schools have trained many practitioners who came from different social origins.

The traditional method of treatment for poisonings in Kerala is classified broadly into two categories, namely, Vishavaidya and Visavidya. The former Visavidya is medical practice using only medicinal plants and mineral drugs following the theory of Ayurveda. The latter, Visavidya, includes chanting of mantras and ritual practices in the process of treatment for poisonings and is mainly based on the tantric concept. There was likely no apparent distinction between Vishavaidya (medical treatment for poisoning) and Visavidya (medical treatment associated with mantra for poisoning) in olden days. But gradually the distinction seems to have become more prominent. The seven literary works in Sanskrit or Prakrit language have traditionally been regarded as the authorized texts of the traditional poison-healing system. These seven works are commonly referred to as Ashtangahrudayam, Vishanarayaneeyam, Uddisam, Utpala, Haramekhala, Kaalavanchanam and Lakshanamrutham. Most of the books are in manuscript form and scripted in manipravala/ Malayalam language, which made it easy to understand the concept of Vishachikitsa to scholars around the globe. Presently some of the books like Vishvaidyayotsnaka, Prayogasamuchayam and Kriyakoumudi are available in translated versions.

MATERIALS AND METHODS

Review of Sarpavishachikitsa (management of snakebite) from Vishvavidyayotsnaka, Kriyakoumudi and Prayogasamuchayam, was described in this article to enlighten the importance of traditional Visha chikitsasampradaya (poison treatment techniques) to the well-wishers and Ayurvedic scholars.

Ayurvedic diagnosing of Sarpavisha (Snakebite)

Snake venoms are predominantly a mixture of proteins, some of which are enzymes and polypeptides. The more important enzymes in snake venom are proteinases, transaminase, L-aminoacid oxidase, cholinesterase, phospholipase A, B, C, D (Pillay, 2016) etc. and those venoms generally Neurotoxic, hemotoxic, and myotoxic. The ayurvedic approach towards the assessment of Visha is based on the doshic predominance of the body. Visha is considered as agantuja, and this will vitiate the Raktradhatu primarily, then Tridosha’s and Ojas which resides in the Hrudaya (Vagbhata, 2010a). Venomous bites can be distinguished by observing the bite marks. Usually, one or two fang marks with little bleeding, numbness, oedema, rice in temperature, slight itching, heaviness etc. are seen. The space between the fang marks gives an approximate idea on the size of the head of the snake.

If the site of the bite is seen with several teeth marks with blood and above said symptoms are absent in a patient, then it is believed to be Nirvisha (Vagbhata, 2010b) (non-poisonous). A venomous bite from snakes causes the following symptoms generally such as pain which is ascending in nature, itching, oedema at the site of the bite, oozing of blood, burning sensation which is ascending in nature, sudden development of massive oedema (especially in Russell’s viper bite), pricking pain at the site of the bite, gastric disturbances like ache, nausea, salivation, vomiting, etc. (krait bite), numbness (cobra bite). In cobra bite, the bitten part will be turned into blackish or bluish, associated with pricking pain and this manifestation is merely by the vitiation of Vata-dosha in the body (Sushruta, 2014).

Viper venom (Mandalivisha) is pitta pradhana in nature, which vitiates Raktradhatu and produces symptoms like a burning sensation, oozing blood, highly edematic, rise in temperature, and yellowish discoulouration of skin etc (Vagbhata, 2010c). Krait venom (Rajilavisha) attributes with Kapha, and the symptoms will be paleness at the bite site, cold in touch, numbness, difficulty in respiration (Vagbhata, 2010d), etc. Sarpavisha (Snake venom) spreads very fast owing to its qualities which are intrinsic and thus diagnosis must be very accurate to ensure the least chances of bad prognosis. When Visha enters the body, it moves from one dhatu to another within a short period, which is termed as Visha vega (Vagbhata, 2010e). In each Visha vega’s shows certain lakshana’s based on dosha, which is vitiated by Visha. So physician can identify by looking into those lakshana’s and administer anti poisonous drugs from time to time. Some of the eminent toxicologists of Kerala are widely using Visha hari leha (Ancheril et al., 1999a) as one of the diagnosing tools to detect the type of snake which has bitten the victim.

Management of cobra bite

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In cobra bite, by looking into signs and symptoms, a physician has to administer the following medicines.

- **Mahakalyanakagrītīm** (a medicated Ghee) mixed with an unequal quantity of honey and one Vilwadi gutika is given as primary treatment.

- **Arkapatrasveda** (sudation with Calotropis leaves): 5 to 10 leaves of Arka (Calotropis giganta) are taken and made into a bundle, these bundles of leaves are cut into two sections and the part where the latex oozing is dipped into ghee which is previously added with rock salt and melted in a hot pan. After the physician tests, the temperature of the bundle, Swedana (sudation) has to be performed at the periphery of the bite mark towards the centre. This procedure will help reduce the pain at the bite site as well as to minimise the development of oedema.

- **Shigrupunarnavādilepa** (External application of herbal paste): Shopha (oedema) is treated by application of Shigrupunarnavādilepa mixed in rice washed water.

- The bite is smeared with a paste of Arkapatra (Calotropis leaves), Eswarimoola (Aristolochia indica) and Hingu (Ferula foetida) reduces the poisonous effect in the body.

- **Seka** (pouring of medicated liquid): Root of Karaskara (Strychnos nuxvomica), barks of Vata (Ficus bengalensis), ashwatha (Ficus religiosa), Udumbara (ficus recemosa), Plaksha (Ficus microcarpa) is used as Parisheka (pouring of liquid) at the bite site.

- **Virechana** (Purgation): If constipation is present, then purgation is induced with Trivrut (Operculina turpethum)leha or Mishrakasneha depending upon the condition of the patient.

- **Nasya** (Nasal drops): Paralysis of neck muscles, diplopia, slurring of speech is treated with nasal drops consisting of juice Bringaraja (Eclipta alba) mixed with finely powdered Vilwadi gutikas. This medication relieves nasal discharge and subsequent pulmonary oedema. Juice of dronapushpi and Tulasi (Osimium sanctum) added with a fine powder of Maricha (Piper nigrum), and Saindhava (Rock salt) also recommended in this condition.

- **Jeevarakshagutika**: Jeevarakshagutika is mixed with cow’s milk is given for drinking. If the patient vomits, immediately a second dose is given, and if vomiting persists, the third dose is given. If the third dose is also vomited then, the case of poisoning is difficult to manage.

- **Anjana**: Diplopia is treated with the application of Anjana (collyrium) prepared from powdered Vilwadi gutikas.

- **Mritisnajeevanigutika**: When the symptoms of cobra bite appear very fast, three tablets of Mritisnajeevan is mixed with 100 ml of tender coconut water and 10 ml should be given every 30 minutes.

- **Oothuchikitsa**: Three persons are made to chew dry ginger, root of Dushparsa (Tragia involucrata), black pepper and Eswaramooli (Aristolochia indica), and physician should instruct them to blow air from their mouth to the ears and vertex of the patient 150 times. This relieves heaviness of head, somnolence and diplopia. There is usually a marked improvement in the verbal and physical responses, drowsiness and drooping of the eyes (Ancheril et al., 1999b).

### Management of viper snake bite

- A decoction of Patoldi Gana 75 ml with one Vilwadi gutika is given as primary medication.

- A warmed mixture of clarified butter and rock salt is applied locally to reduce the burning sensation. Juice of malatee (Jasminum grandiflorum) mixed with honey is given to stop hemoptysis. Juice of neem leaves (Azadirachta indica) with honey is beneficial in case of hematemesis. When hematuria is seen, a physician has to give Tarunabhashkaragutika (powdered) mixed with tender coconut water in divided doses for every 30 minutes depending upon the severity of symptoms.

- **Tindrinee** (Tamarindus indicus), Punarnava (Boerhaavia diffusa), Uttamaaranee (Pergularia daemia), Guduchi (Tinospora cordifolia), bringaraja (Eclipta alba)Arka (Calotropis gigantea), Nimba (Azadirachta indica), Shigru (Moringa oleifera), following leaves are tied into a bundle and cooked in rice washed water when slightly warm shall be pressed on the edematous region.

- The fruit of Dathoora (Datura metal) should be punctured, and seeds are removed from it. This gap is filled with rock salt, and the fruit is to be cooked with rice washed water. Later the fruit is ground into a paste with some rice washed water and applied on oedema.
• Dhanyaka (Corriandum sativum), Viwwamoola (Aegle marmelos), Jeerkaka (Cuminum cyminum) are taken in equal quantity, fried in a pan until it turns into brownish red color and added with coconut water. This mixture is given to the patient to prevent vomiting. Viwwadimodaka is also beneficial in case of vomiting due to viper bite.

• Paranthyaditailam is one of the best medicine used in conditions of Mandalisarpajanyavruna (Non-healing ulcer due to viper bite) (Ancheril et al., 1999c).

Management of Krait bite

• A decoction of Patoladi gana mixed with Vilwadi gutika is given primarily.

• Shunti (Zingiber officinale), Maricha (Piper nigrum) and Pippali (Piper longum) are boiled in water and given to the patient for drinking.

• Internal administration following drugs like Vatsanabha (Aconitum Ferox), Kushta (Sausurea lappa) Grihadooma, Katuaka (picrorhiza kurrorra), Harenuka (Piper cubeba), Chakramarda (Cassia tora) Gorochana, as decoction will reduce the symptoms of Krait bite.

• Nasya (Nasal drops) is administered with drugs such as Gorochana and Sanidhava lavana and Daaruharidra (Berberris aristata) (Ancheril et al., 1999d).

RESULTS AND DISCUSSION

In Darveekara (cobra) Visha, Vatadosha is vitiated and leads to the manifestation of symptoms like Thoda prickling pain or Shoola (localized pain), paralysis of muscle in the neck, shoulder, jaw, eyelids etc. usually respiratory failure followed by coma leads to death. Unlike other snake bites, cobra venom shows the fast manifestation of symptoms, so the physician has to use very potent remedies to save a life. Vatahara and Vishaharadrvayas are mainly used to subside the Vatadosha and Visha simultaneously. Oothuchikitsa is implemented here to retrieve the verbal and physical responses of the patient. Usually within 100 – 150 blows of air to both nostrils and vertex helps to get a significant result. Mandalivisha (viper venom) vitiates Pithadosha, thus demonstrates the various respective lakshanas in the body. Use of Shigrupunaravanadilepaa, Daturakalka like yogas’s will be more beneficial in case of Mandalidamssjanyaja shpaha (viper bite caused oedema). Most of the cases of Viperine bite, complications like non-healing ulcers will be existing for much more extended period due to Pithadosha in it, Paranthyaditaila yoga can be tried on these conditions for Shodhana (purification of the wound) of Vrana as well as Ropana (healing). In Rajila (krait) Visha, even though symptoms develop very slowly, delayed response to the medications results in difficult management in severe envenomated cases. Respiratory difficulty, induction of sleep, intoxication, delayed verbal response, oedema, and paleness of the body may be seen as significant lakshnas in Rajilavisha (Krait bite). Here Kaphadosha is vitiates by Visha and manifestations are produced accordingly, Vaidya has to administer more Kapakahara and Vishaharadrvayas to the patient from time to time. Trikatu (the combination of Piper nigrum, Pipper longum, Zingiber officinale), Nasya (nasal drops) with Teekshanadrvayas, Teekshanaanjana (collyrium) has to be given to bring back the consciousness of the patient.

CONCLUSIONS

Ayurvedic diagnosis of snakebite is different from the other systems of medicine, and it is mainly focused on the state of dosha which is vitiates by the Visha, so it’s a difficult task for a Vishavaidya to fix the amount of envenomation that has taken place in the patient’s body. As per traditional Visha chikitsa sampradaya, the biological classification of Sarpa (Snakes) is of secondary importance for the practitioners. They diagnose the Sarpa visha mostly through the perception of the vitiation of tridosas in the patient’s body, and practitioners can recognize easily the nature of poison which is disturbing the Prakriti of each patient. A better understanding of anti-poisonous formulations from an eminent vishavaidya will contribute a new dimension for further research in the field of traditional Ayurvedic snakebite management.

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Conflict of Interest

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