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CLINICAL PRESENTATION OF SCORPION STING

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ABSTRACT

Scorpion bite is a common global public health problem including India. Despite various speciesof scorpions, only few of these can be potentially lethal to humans. In India, the annual number of scorpion stings cases exceeds 1.23 million, of which over 32,250 may be fatal. Only about 25 species are known to have venom capable of killing a human.[1] In some parts of the world with highly venomous species human fatalities regularly occur, primarily in areas with limited access to medical treatment. Scorpion bite can result in a wide range of clinical effects such as neurotoxicity, cardio toxicity and respiratory dysfunction including pulmonary oedema. Anti-scorpion venom is the only specific treatment available in India but has many limitations. Wide arrays of the plants and their active principles have been evaluated for pharmacological properties which is useful in the treatment of scorpion bite.

KEYWORDS: Scorpion bite, Ayurveda, Anti scorpion venom, vrischika.

INTRODUCTION

Scorpion sting is one of the common life threatening acute medical emergencies and is a common global public health problem including India. It can be considered as a neglected public health problem as there are no available accurate statistics on scorpion stings world-wide.[1] It is associated with substantial morbidity and mortality. It constitutes an occupational hazard especially in field of agriculture. High mortality associated with scorpion

bite includes poor health services, difficult and untimely transportation facilities, wrong traditional beliefs, delay in anti-scorpion venom administration. It is estimated that in India, the annual number of scorpion stings cases exceeds 1.23 million, of which over 32,250 may be fatal. India has a incidence of 0.6%.[2]

The venom is a clear, colourless, proteinouscontains toxalbumins having neurotoxic and hemotoxic actions. Its toxicity is greater than that of snakes but only a small quantity is injected.[3] The venom may contain multiple toxins and other compounds. The venom is composed of varying concentrations of neurotoxin, cardiotoxin, nephrotoxin, hemolytic toxin, phosphodiesterase's, phospholipases, hyaluronidases, glycosaminoglycans, histamine, serotonin, tryptophan, and cytokine releasers.[4] Globally, 1988 species of scorpions are known to occur of which, 113 valid species of 25 genera under 6 families exist in India.[5] Among the 86 species of scorpion in India, *Mesobuthustamulus* and *Palamneusswammer-dami*are of medical importance.[6]

Composition Venom[7]

Scorpion venom may contain multiple toxins and other compounds. The venom is composed of varying concentrations of neurotoxin, cardiotoxin, nephrotoxin, hemolytic toxin, phosphodiesterase's, phospholipases, hyaluronidases, glycosaminoglycans, histamine, serotonin, tryptophan, amino acids, oligopeptides, 5- hydroxyptamine and proteins that inhibit protease, angiotensin's, succinate dehydrogenase and cytokine releasers.

Mode of Action of Venom[8]

Venom toxins alter the sodium channel, which leads to prolonged neuronal activity. Neuromuscular overstimulation results in somatic and cranial nerve hyperactivity. Additionally, serotonin may be found in scorpion venom and is thought to contribute to the pain associated with Scorpion envenomation. The venom is a potent autonomic stimulator, resulting in the release of massive amounts of catecholamines from the adrenals. It also has some direct effect on the myocardium.

Sign and symptoms

Dysfunction of cranial nerve and hyperexcitability of skeletal muscles develop within hours.

1. Patient experience a painful, burning, tingling, numbing sensation and redness at bite site.
2. Allergic reaction can be developed which can sometimes resemble anaphylaxis reaction.

Life threatening symptoms of scorpion bite

1. Numbness
2. Dysphagia
3. Blurry vision
4. Erratic eye movements
5. Excessive salivation
6. Seizures
7. Vomiting
8. Difficulty in breathing
9. Excessive sweating
10. Tachycardia
11. Hypertension and hypotension

Complications[9]

1. Tachycardia
2. Hypertension
3. Arrhythmias
4. Hyperthermia
5. Acidosis.
6. Death is typically caused by heart or respiratory failure some hours after they have been stung

Diagnosis

Diagnosis is done with a 'tap test'In this test, the clinician taps the place where the scorpion has stung to see if the pain gets worse. This reaction is an indicator of a scorpionsting. Local reaction last 7 to 10 days. They are usually minor and go away without complications in a few days. More severe bites can cause more pain, fever and muscle aches for a few days and more serious injury to the skin. In severe symptoms, blood or imaging tests are done to check for the effects of the venom on liver, heart, lungs and other organs.

Treatment[10]

1. The limb is immobilized and a pressure bandage is applied proximal to the site of sting.
2. The site may be incised and washed with water or weak solution of ammonia, borax or KMnO4.

3. Prazosin Therapy-Prazosin 30 µg/kg/dose (1mg for adult, 500 µg for children) is given orally and then after every 3hrly till extremities are warm, dry and peripheral veins are visible.
4. Calcium gluconate 10 ml of 10% solution slow IV is given for pains, cramps and edema.
5. Barbiturates/chlorpromazine is given to sedate and control convulsion.
6. Atropine to prevent pulmonary edema.

According to *Ayurveda*

I. Origin and classification of scorpion (*Vrischika*)[11]

1] *Mandavisha vrischika* (mild poisoned scorpion)

Scorpions germinating from cow-dung or from any rotten subsrances are mandavisha.

2] *Madhyamavisha vrischika* (moderate poisoned scorpion)

Those which germinate from (decayed) wood or (decayed) bricks are madhyamavisha.

3] *Tikshnavisha vrischika* (strong poisoned scorpion)

Those which originate from the decomposed carasa of snake Or from any other poisonous putrid Organic matter are *tikshnavisa*.

II. Poisonous Features

These features can be classified into two types

1] General Poisonous Features[12]- The scorpion poison is sharp (*tikshna*) in nature and causes burning sensation like fire in the beginning (local spread), and thereafter it spreads upwards (general spread). At the end, it localises at the site of sting. It produces severe pain, blackish discolouration, pricking and throbbing type of pain at the site of sting.

2] Specific Poisonous features[13]

A) *Mandavishalakshna* – A bite by a scorpion of this species is accompanied by pain (in the site of bite), tremours, stiffness of body and flow of blackish discoloured blood. In the case of a bite at any of the pain radiates upwards accompanied by a burning sensation, perspiration, swelling of the bitten part and fever.

B) *Madhyamavishalakshana*- A bite by a scorpion of this species is accompanied by a swelling of the tongue, difficulty in digitations and deep fainting.

C) *Tikshnavishalakshana*- A bite by a scorpion produces poisonus impulses (vishavega) similar to snake poison and gives rise to pustular eruptions along with vertigo, burning sensation, fever and excessive discharge of blackish discoloured blood from the passages due to which the person dies soon.

Ayurvedic Management

- In the scorpion poison fomentation, massage with ghee and salt, hot sprinkling, intake of ghee with edibles or alone should be used.[14]
- Treatment According to type of Scorpion sting.[15]

A] Strong ad Moderate Venomed Scorpion poison

A bite by a Scorpion of the middle-venomed or strong-venomed class should be treated as a case of snake bite to all intents and purposes. And around the site of the bite fomentation should be done followed with the:

1. *Pratisaranam*- After the fomentation, at the site of the bite should be marked with superficial incisions (scratches) and should be gently rubbed (*pratisarana*) with powders of *haridra*, *saindhava*, *trikatu* and the fruit and the fruit and flower of *sarisha*.
2. *Lepam*- The tender leaves of *surasa* pasted with the juice of *matulunga* and the urine of the cow in a lukewarm state or lukewarm cow dung should be employed in plastering and fomenting the affected part
3. *Panam*- Portion of ghee mixed with honey, milk with profuse quantity of sugar.

B] Mild Scorpion poison

In case of a bite by a mild-venomed one can be followed as mentioned in the specific treatment principles.

1. *Secanam* (toileting of the wound)- Should be sprinkled over with the *Chaka-Taila* or with a *tepid taila* duly prepared with the drugs of the *Vidaryadi* group.
2. *Svedanam* (Fomentation)- The affected locality should be (repeatedly) fomented with the application of poulitices in the utkarika from prepared with anti-venomous drugs (sirisha etc.)
3. *Panam*- Treacle prepared with the cold water, *Chatur-jataka* and sugar should be recommended as drinks.
4. *Dhupanam* (Fumigation)- The compound made of the features of the tail of a cock or a peacock, sandava, oil and ghee mixed together and burnt is a speedy destroyer of scorpion-poison, As an alternative the fumes of a compound made up of *Kusumbha* flowers, the two kinds of *rajani* and *kodrava* straw should be mixed with the ghee.

Since ancient time many herbs are use in the treatment of scorpion bite and it is also scientifically proved. There are many plant which has a therapeutic value in the scorpion bite treatment.

1. Eswari / Gandha-Nakuli(*Aristolochiaindica)*- It has anti-scorpion venom property. The leaf juice istaken orally & Rootspaste is applied externally.[16]
2. Kalmegh (*Andrographispaniculata*)-anti-scorpion venom effect. Aerial parts -Ethanolic extractfor venom neutralization.[17]
3. Haritaki (Terminaliachebula) – Fruit juice is used externally as well as internally. It acts as cardio protective, wound healing and analgesic.[18]
4. Arjun (Terminaliaarjuna)- Wood ash is taken orally. It acts as cardio protective, wound healing, analgesic and anti-oxidant.[19]

Some of the Anti-Poisonous yogas from Yogarantakara[20]

1. Mantravidhi
2. Jirakadilepa
3. Ajaksiradiyogam
4. Karpasapatradiyogam
5. ManahsiladiGutika
6. Jaipalaprayoga
7. UllipasanaLepa
8. Usage of Punarnavayoga

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