



Study of clinical profile of scorpion sting in children presenting in NMCH (Nalanda medical college hospital)

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Abstract

Scorpion stings are primarily due to accidental contact with scorpion. They use their stings only when roughly handled or trodded on. Scorpion does not always inject venom when it stings since it can control its ejaculation while stinging; thus the sting is total, partial or non-existent. Study had been planned in Nalanda Medical College Hospital to evaluate the clinical profile of the scorpion bite because the burden of such cases are high.

The study was planned in Department of Paediatrics in in Nalanda Medical College Hospital. The data from the 30 patients were collected and presented as below. Inclusion Criteria: Children's below 12 years of age reported with confirmed scorpion sting bite. It has been observed that time intervened between sting and admission is probably a key factor for better outcome. There is now professional confidence for successful management of scorpion sting in India. Early medical attention, avoiding conventionally used harmful drugs like steroids, antihistaminics and other cocktail of sedatives may reduce complications and mortality.

Keywords: scorpion stings, clinical profile, bite, etc

Introduction

Scorpions live in warm dry regions throughout India. They inhabit commonly the crevices of dwellings, underground burrows, under logs or debris, paddy husk, sugarcane fields, coconut and banana plantations. Their distribution is more in regions with abundant red soil. Scorpions may be found outside their natural range of distribution when inadvertently transported with other items such as luggage. Scorpions retreat in the crevices of dwellings during the day only to emerge at night; thus most stings are reported at night. Scorpion stings increase dramatically in summer months and are lowest in winter.

Scorpion stings are primarily due to accidental contact with scorpion. They use their stings only when roughly handled or trodded on. Scorpion does not always inject venom when it stings since it can control its ejaculation; thus the sting is total, partial or non-existent. Scorpions capable of inflicting fatal stings in humans are all members of families Buthus and Scorpionidae.

Scorpion stings are a cutaneous condition caused by the stinging of scorpions, usually resulting in pain, paresthesia, and variable swelling. The anatomical part of the scorpion that delivers the sting is called a "telson" [1, 2].

Scorpions are arthropods – a relative of insects, spiders and crustaceans. The average scorpion is about 3 inches (7.6 centimeters) long, but different species can be smaller or larger. Scorpions have eight legs and a pair of crab-like pinchers. They sting rather than bite, using the stinger in their tails. The venom itself contains a complex mix of toxins that affect the nervous system (neurotoxins). Scorpions are nocturnal creatures that resist stinging unless provoked or attacked. They can control the amount of venom they release – depending on how threatened they feel – so some stings may be almost entirely venomless.

Scorpions come in a variety of colors - from tan to light brown to black. Each has a long tail segment that contains a stinger. Scorpions are found in highest numbers across the rural areas of Patna and adjoining districts. However, they can be found occasionally in most US states and in temperate regions of both South America and Africa and some even reside in cold climates. Scorpions hunt at night and hide along rocks or trees during the days. Homes built in arid or desert regions commonly have scorpions in them. In 2015, there were reports of airline passenger(s) being stung in flight. The planes were landed before reaching their destinations to rid the aircraft of the scorpion(s).

Most scorpion stings cause only localized signs and symptoms, such as pain and warmth at the site of the sting. Sometimes these symptoms may be quite intense, even if you don't see redness or swelling [3].

Most scorpion stings in India cause only minor signs and symptoms, such as pain and warmth at the sting site.

Mild signs and symptoms might include:

- Pain, which can be intense
- Numbness and tingling in the area around the sting
- Slight swelling in the area around the sting

More-severe signs and symptoms might include:

- Muscle twitching or thrashing
- Unusual head, neck and eye movements
- Drooling
- Sweating
- Vomiting
- High blood pressure (hypertension) or low blood pressure (hypotension)
- Accelerated heart rate (tachycardia) or irregular heart beat (arrhythmia)

- Restlessness or excitability or inconsolable crying (in children)

As with other stinging insects, such as bees and wasps, it is possible for people who have previously been stung by scorpions to also have allergic reactions with subsequent stings. These subsequent stings are sometimes severe enough to cause a life-threatening condition called anaphylaxis. Signs and symptoms in these cases are similar to those of anaphylaxis caused by bee stings and can include hives, trouble breathing, and nausea and vomiting.

Scorpions are arthropods — a relative of insects, spiders and crustaceans. The average scorpion is about 3 inches (7.6 centimeters) long. Scorpions have eight legs and a pair of lobster-like pinchers and a tail that curves up. They sting rather than bite, using the stinger in their tails. The venom itself contains a complex mix of toxins that affect the nervous system (neurotoxins).

Scorpions are nocturnal creatures that resist stinging unless provoked or attacked. They can control the amount of venom they release — depending on how threatened they feel — so some stings may be almost entirely venomless.

Due to the lack of adequate emergency medical facilities, morbidity and mortality rate of scorpion envenomation is still high in rural areas. Hence study had been planned in north Indian Tertiary care hospital regarding the understanding of biochemical properties and the clinical effects of the venom, have important implications in designing appropriate therapeutic interventions [4].

Methodology

The study was planned in Department of Paediatrics in Nalanda Medical college and Hospital Bihar, India. The data from the 30 patients were collected and presented as below. The approval of the institutional ethic committee had been taken before the study. All the patients were informed about nature of study and consent taken. The aim and the objective of the study are conveyed to all patients.

Following is the Inclusion & exclusion criteria of the current study

Inclusion Criteria: Children’s below 12 years of age reported with confirmed scorpion sting bite.

Exclusion Criteria: Children’s admitted with unknown or uncertain bites.

After study parameters, social demographic parameters like age, gender, place of residence, time of bite, location where bite has occurred and site of bite. Clinical parameters included heart rate, respiratory rate, blood pressure, oxygen saturation, sensorium, priapism, salivation, vomiting, sweating, cold extremities and pupil size. Laboratory parameters considered were blood sugar, chest x-ray, ECG, echocardiography etc.

Complications like autonomic storm, shock, myocarditis, encephalopathy or intra-cranial bleed, need for assisted ventilation, need for inotropes, hospital acquired infection, nosocomial sepsis and death were recorded.

Results & Discussion

The data from the 30 patients admitted in emergency ward of

this hospital with confirmed scorpion sting and symptomatic patients were collected and presented as below. The Fig 1 represents the data of the age, sex and the geographical area of scorpion sting patients.

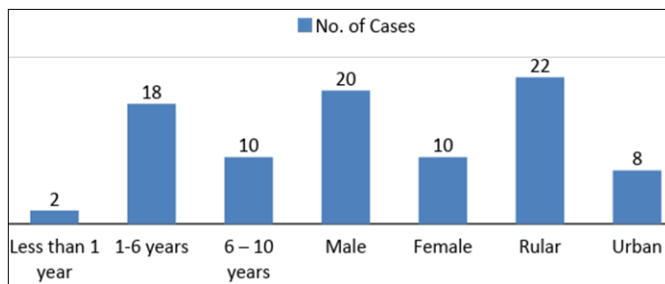


Fig 1: Age, Sex & Geography

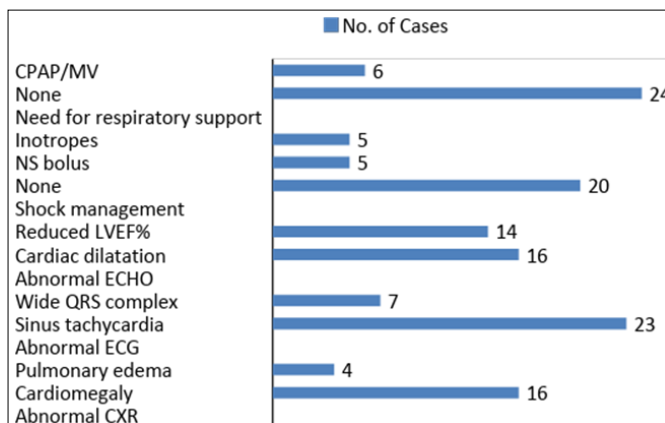


Fig 2: Symptoms Observed

Table 1: Observation during hospitalization

| Characteristics | No. of Cases |
|------------------------------|--------------|
| Abnormal CXR | |
| Cardiomegaly | 16 |
| Pulmonary edema | 4 |
| Abnormal ECG | |
| Sinus tachycardia | 23 |
| Wide QRS complex | 7 |
| Abnormal ECHO | |
| Cardiac dilatation | 16 |
| Reduced LVEF% | 14 |
| Shock management | |
| None | 20 |
| NS bolus | 5 |
| Inotropes | 5 |
| Need for respiratory support | |
| None | 24 |
| CPAP/MV | 6 |
| Duration of stay in hospital | |
| < 3 days | 25 |
| >3-5 days | 5 |
| Outcome of Study | |
| Death | 1 |
| Cardiac dysfunction | 4 |
| Recovery | 25 |

The socio-demographic factors and the factors like age of incidence, outdoor bites, extremities being the commonest site

of sting, seasonal increase of cases were comparable to various studies.^[5-6] Admission of more than 50% of cases are of Class - I in our center may be unique to semi-urban centers which serve round the clock and depicts the mind set and awareness of patients to reach to a higher centre in case of envenomation.

Pain is the commonest symptom which ranged between within few minutes to hours. ECG helps in diagnosis of fatal conduction disturbance, myocarditis, ischemia and very importantly tachycardia is the commonest finding usually seen with in first 4 hours and may persist for 24-72 hours. Myocarditis is the dreaded complication of scorpion sting and needs high index of suspicion and repeated clinical examination to diagnose for timely intervention. some of the patients continued to have tachycardia and fluctuating blood pressure in which Prazosin was given for longer period of time of up to seven days to control autonomic storm. Bradycardia was noted in only 5 patients at admission but Biswal *et al.* reported bradycardia in 3.5% of cases^[7-8]. Priapism was noted in nearly 16 of male children. But Bawaskar *et al.* has noted occurrence of this clinical symptom in as many as 10% of patients and hyperglycemia was documented in 44 of our cases, and this is similar to studies by Balasubramaniam *et al.*^[9-10]. Drooling of excessive saliva was noted in almost all cases and is ascribed to be due to autonomic storm.

Children who received steroid and antihistaminics had a higher mortality than the cases who did not receive any treatment. Even in those who received prazosin when along with steroid and antihistaminics had a significantly higher mortality, than those who did not receive any drugs before admission. Antihistaminics and dexamethasone alone or in combination are known to potentiate the effect of catecholamine in CVS and CNS and worsen encephalopathy. Cases which died in our study were of similar case situations.

Conclusion

Hence from above findings it can be concluded that time intervened between sting and admission is probably a key factor for better outcome. There is now professional confidence for successful management of scorpion sting in India. Early medical attention, avoiding conventionally used harmful drugs like steroids, antihistaminics and other cocktail of sedatives may reduce complications and mortality. Judicious use of inotropes like Dobutamine for management of shock and alpha receptor blocker Prazosin has been found to be very useful and beneficial in decreasing morbidity and mortality of scorpion sting cases.

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