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Clinical profile and outcome of scorpion bite in children in Magadh region of Bihar

Dr. Mani Bhushan[1], Dr. Vinay Kumar[2*], Dr. Archana Bharti[3], Dr. Bankey Behari Singh[4]
[1, 2] Assistant Professor, Department of Paediatrics, Anugrah Narayan Magadh Medical College and Hospital, Gaya Bihar, India
[3] Senior Resident, Department of Biochemistry, AIIMS, Patna, Bihar, India
[4] Associate Professor and HOD, Department of Paediatrics, Anugrah Narayan Magadh Medical College and Hospital, Gaya Bihar, India

Abstract
Scorpion stings are a cutaneous condition caused by the stinging of scorpions, usually resulting in pain, paresthesia, and variable swelling. 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 clinical profile of the scorpion bite.
The study was planned in Department of Paediatrics in Anugrah narayan magadh medical college and hospital. The data from the 50 patients were collected and presented as below. Inclusion Criteria: Children's below 12 years of age reported with confirmed scorpion sting bite.
The present study shows that children should have supervised play when it is outdoor. Early hospitalization and administration of accurate dose of scorpion antivenom, prazosin and closely monitoring the victim in intensive care unit might help to reduce mortatility.

Keywords: scorpion stings, clinicalprofile, bite, etc.

Introduction

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].

Most scorpion stings vary from small swelling to medically significant lesions in severity, with only a few able to cause severe allergic, neurotic or necrotic reactions. Only two species of scorpions can inflict stings which result in death of normal healthy humans: the Israeli deathstalker (*Leiurus quinquestriatus*) and the Brazilian yellow scorpion (*Tityus serrulatus*). Antivenom exists for both species' stings.

Scorpions are a member of the Arachnida class and are closely related to spiders, ticks, and mites. Scorpions have two pincers, 8 legs and an elongated body with a tail composed of segments; they range in length from about 9 to 21 cm. Some species are smaller, more translucent, and harder to see. They may appear as a thin string on the ground. The last tail segment contains the stinger (also termed a telson) that transmits a toxin to the recipient of a sting. Most scorpions are harmless. Although about 2000 species exist, only about 25-40 species can deliver enough venom to cause serious or lethal damage to humans. One of the more venomous or potentially dangerous species, especially for infants, young children, and the elderly in the United States is *Centruroides exilicauda* or bark scorpion. Contact with scorpions is usually accidental. Scorpion stings are painful, and they can be fatal, particularly to children. Scorpions may sting more than once; the stinger, located at the end of the tail segment is usually not lost or left in the person's tissue after a sting.

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 southern United States and in arid or desert regions in most other countries. 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].

Signs and symptoms at the site of the sting may include:

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

Signs and symptoms related to widespread (systemic) venom effects usually occur in children who are stung and may include:

- Difficulty breathing
- Muscle twitching or thrashing
- Unusual head, neck and eye movements
- Drooling
- Sweating
- Nausea and vomiting
- High blood pressure (hypertension)
- 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 clinical profile of the scorpion bite [4].

Methodology
The study was planned in Department of Paediatrics in Anugrah narayan magadh medical college and hospital. The data from the 50 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 consent. 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 bite.

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 50 patients were collected and presented as below. The table 1 represents the data of the age, sex and the geographical area of scorpion sting patients.

Table 1: Age, Sex & Geography

Age	No. of Cases
Less than 1 year	2
1-5 years	32
5 – 10 years	16
Sex	
Male	31
Female	19
Geographic Origin	
Rular	41
Urban	9

Table 2: Symptoms Observed

Symptoms	No. of Cases
Pain at the site of sting	40
Swelling	5
Salivation	19
Vomiting	21
Priapism*	16
Restlessness	21
Diaphoreses	36
Cold extremities	42
Breathlessness	10
Altered sensorium	2
Convulsion	2
Hypotension	33
Hypertension	5
Bradycardia	5
Tachycardia	27
Hyperglycemia	44

Table 3: Observation during hospitalization

Characteristics	No. of Cases
Abnormal CXR	
Cardiomegaly	16
Pulmonary edema	4
Abnormal ECG	
Sinus tachycardia	31
Wide QRS complex	7
Abnormal ECHO	
Cardiac dilatation	16
Reduced LVEF%	14
Shock management	
None	41
NS bolus	5
Inotropes	5
Need for respiratory support	
None	43
CPAP/MV	7
Duration of stay in hospital	
< 3 days	42
>3-5 days	9

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, ischemia and very importantly tachycardia is the commonest finding usually seen with in first 4 hours and may persist for 24-72 hours.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].

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 died in our study were of similar case situations.

Conclusion

The present study shows that children should have supervised play when it is outdoor. Early hospitalization and administration of accurate dose of scorpion antivenom, prazosin and closely monitoring the victim in intensive care unit might help to reduce mortatility.

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