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Research Article

A study on the clinical profile of scorpion envenomation in children

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ABSTRACT

Background: Scorpion envenomation is a common emergency in children. The main objective is to study the clinical profile of scorpion envenomation in children.
Methods: Retrospective analysis of all the scorpion sting case records for one year. Case records were analyzed for history, clinical features, investigations, treatment modalities and outcome.
Results: During the study period, 66 cases were admitted and treated with the following results. 33% was Class I, 52% was Class II and 15% was of Class III severity. There was no mortality. The common clinical symptoms noted were: Pain at sting site, diaphoresis and restlessness. The common clinical signs were: Cold extremities, Tachycardia and hypotension. In this study we noted a male preponderance. 76% of cases received first dose of prazosin within 8 hours. The common complications were Peripheral circulatory failure, myocarditis and congestive cardiac failure. Outcome was directly proportional to sting- prazosin interval.
Conclusions: The morbidity and mortality of scorpion envenomation is directly related to the sting-Prazosin interval. Education of Health care workers in all Primary health centers and Government hospitals about scorpion sting and its need for early treatment with prazosin will reduce morbidity and mortality due to scorpion sting. A concept similar to that of "Golden Hour" in trauma care should be proposed for the care of children with scorpion envenomation. Further, antiscorpion venom should be made available widely to prevent complications and mortality.

Keywords: Scorpion envenomation, Peripheral circulatory failure, Myocarditis

INTRODUCTION

Scorpion sting is very common in rural India and is the second commonest envenomation, next to snake bite in our hospital. Our hospital is a major referral centre catering to the needs of the nearby three districts. Mortality due to scorpion envenomation has now come down significantly with the use of Prazosin and other advances in the care for these children. The usefulness of prazosin therapy in scorpion sting was scientifically established in mid-eighties by Bawaskar et al, which was later strengthened by many other investigators.[1-3] Since then the mortality due to scorpion envenomation has reduced remarkably. The present study is our experience in a referral Medical College Hospital.

METHODS

Source of data

Case records of children admitted with scorpion envenomation in our hospital.

Study design

It is a Retrospective descriptive study.

Study place

Pediatric Intensive Care Unit (PICU) of Government Dharmapuri Medical College Hospital, Dharmapuri, Tamilnadu, India.

Study period

Study period was from January 2014 to December 2014.

Inclusion criteria

All children less than 12 years admitted with signs and symptoms of scorpion envenomation.

Exclusion criteria

Unknown bites

Study Parameters

All the case records were analyzed for the following parameters: Detailed history including age, sex, time of sting, site of sting and symptoms of pain at sting site, sweating, increased salivation, emesis, swelling at the sting site, convulsions, breathlessness, abdominal pain, fever, restlessness and altered sensorium were analyzed. Clinical signs like altered sensorium, shock, priapism, cyanosis and vital signs like heart rate, respiratory rate, and blood pressure were recorded. Chest radiograph and Electrocardiography (ECG) findings were recorded. Treatment details including IV fluids, Oxygen, Prazosin, Dopamine, Dobutamine, anti-failure treatment and ventilatory care were analyzed. Outcomes were also analyzed.

According to the signs and symptoms, patients were classified based on Abroug's Classification which is easy to sort the envenomation cases and to compare the severity classes with literature data.[4,5]

Abroug's classification of severity of scorpion envenomation as follows.

- Severity Class I: Local symptoms;
- Severity Class II: Thrill, Hypersudation, nausea, vomiting, diarrhoea, hypertension and priapism;
- Severity Class III: Cardiovascular and/or respiratory and/or neurological symptoms.

Data Analysis was done using Microsoft office Excel software.

RESULTS

During the study period, 66 children were admitted in PICU with scorpion envenomation (n=66). There was a slight male predominance noted with a male: female ratio of 1.27:1. The peak incidence was noted in the months of August to October. There were two peaks noted in the age distribution pattern- one at 4 to 6 years category (27%) and the other at 1 to 3 years category (26%).

Table 1: Clinical profile of scorpion envenomation (n=66).

Clinical profile of scorpion envenomation (n=66)		
Age distribution		
Age	No	Percentage
1 month - 1 year	7	(11%)
1 - 3 years	17	(26%)
4 - 6 years	18	(27%)
7 - 9 years	12	(18%)
10 - 12 years	12	(18%)
Sex distribution		
Sex	No	Percentage
Male	37	56
Female	29	44
Site of sting		
Site	No	Percentage
Trunk	15	(23%)
Face and scalp	2	(3%)
Upper limb	17	(26%)
Lower limb	32	(48%)
Symptoms distribution		
Symptom	No	Percentage
Pain at site of sting	66	(100%)
Salivation	26	(36%)
Diaphoresis	57	(79%)
Vomiting	34	(47%)
Swelling	28	(39%)
Dyspnea	23	(32%)
Pain abdomen	3	(4%)
Fever	3	(4%)
Restlessness	44	(61%)
Altered sensorium	4	(6%)
Distribution of clinical signs		
Sign	No	Percentage
Shock	48	(67%)
Tachycardia	46	(64%)
Bradycardia	3	(4%)
Cyanosis	7	(10%)
Tachypnea	16	(22%)
Priapism	9	(12%)
Hypertension	3	(4%)
Hypotension	42	(58%)
Altered sensorium	4	(5%)
Clinical severity distribution		
Severity class	No. of cases	Percentage
Class I	22	(33%)
Class II	34	(52%)
Class III	10	(15%)
Sting-prazosin interval		
Sting – prazosin interval	No. of cases	Percentage
< 4 hours	15	(23%)
4 – 8 hours	35	(53%)
9 – 13 hours	9	(14%)
14 – 18 hours	6	(9%)
>19 hours	1	(1%)
Complications		

Complications	No. of cases	Percentage
Peripheral circulatory failure	44	(67%)
Pulmonary edema	1	(1%)
Myocarditis	10	(15%)
Congestive cardiac failure	5	(8%)
Seizures	2	(3%)
Encephalopathy	4	(6%)

Lower limbs (48%) were most commonly encountered site of sting. Out of 66 cases, 30 cases (45%) were referred from other health facilities and 36 cases (55%) came directly to the hospital.

Pain at the sting site (100%), diaphoresis (79%) and restlessness (61%) were the most common presenting symptoms. The common physical signs noted were Shock (67%), Tachycardia (64%) and Hypotension (58%). Priapism was noted in 12% of cases and 4% of cases had hypertension. With regard to severity, 52% of cases presented with Class II severity, while 33% in Class I and 15% in Class III severity were noted.

76% of children received first dose of prazosin within 8 hours and only 1% of children in the study group received first dose of prazosin after 18 hours of sting. Commonest complication was Peripheral circulatory failure (67%) followed by Myocarditis (15%). One child had pulmonary edema. 44 cases were admitted with autonomic storm which reversed during a variable period of 6 hours (4%) to 50 hours (9%).

In Imaging studies, ECG changes were noted in 64% of cases, with sinus tachycardia being the commonest finding (62%). 12% had ST elevation/depression and 9% had T wave inversion. Chest X-ray revealed cardiomegaly and/or features of pulmonary edema in 5% of cases.

The mean duration of stay in the hospital was 3 days.

There was no mortality due to scorpion envenomation during the study period.

Complications were noted less frequently in children, who received a dose of prazosin early, within 8 hours after sting, compared to those children, who received prazosin late i.e. after 8 hours of sting (Table 2).

Table 2: Sting-prazosin interval and complications.

Complications	<4 hours	4-8 hours	9-13 hours	14-18 hours	19 hours and above
Peripheral circulatory failure	7	29	4	3	1
Myocarditis	0	2	4	3	1
Congestive cardiac failure	0	0	2	2	1
Pulmonary edema	0	0	1	0	0
Hypertension	0	1	1	1	0
Encephalopathy	1	1	1	1	0
Convulsions	1	1	0	0	0

DISCUSSION

Scorpion sting is a common Pediatric emergency encountered in any pediatric emergency service. Scorpion stings were more common in males compared to females. Maximum number of cases was in the age group of 1-3 years and 4-6 years in our study, which is consistent with the age pyramid pattern of India. But literature review suggests that Scorpion Stings are accidents which are independent of age and sex.[2,3]

Incidence of scorpion sting was highest in months of August to October. Extremities were the most common body parts stung. When compared with other studies Sting-Prazosin interval was less in our study.[1,6] This is because of improved awareness about scorpion envenomation among public and health care workers.

In the present study Pain at the sting site and cold extremities were the most common presenting symptom and signs respectively. Peripheral circulatory failure was the most common complication encountered. Life threatening complications like myocarditis, pulmonary edema were encountered in a significant number of cases. Most of the cases presented with Class II (52%) severity. In the present study complications were noted more frequently in younger children and in cases who received the first dose of prazosin after 8 hours of sting. This was comparable to other studies.[1,3,7,8]

Mean duration of hospital stay was 3 days. When compared with other studies, Class I severity was less frequently observed in this study. This may be because these cases were mostly managed at the primary and secondary level health care facilities.

In the present study there was no mortality during the study period. The mortality rate in various other studies range from 3.5% to 15%.[1,7]

CONCLUSION

The morbidity and mortality of scorpion envenomation is directly related to the sting-Prazosin interval. Education of Health care workers in all Primary Health Centers and Govt. Hospitals about scorpion sting and its need for early treatment with prazosin will reduce Mortality due to scorpion sting. A concept similar to that of "Golden Hour" in trauma care should be proposed for the care of children with Scorpion Envenomation. Further if Anti-Scorpion Venom is made available widely and used early, morbidity and mortality can be further reduced.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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