

# Scorpion Sting Associated with Cellulitis and Bradycardia: A Case Report

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## ABSTRACT

Scorpion stings are so frequent complaints as like other bites across the globe and it is one of the more common causes of hospitalization in the rural India. Normally, the stings will lead to the intense pain but having less mortality compare to another stings and bites, around 30% of untreated cases may proceed to serious clinical conditions like Bradycardia, Arrhythmia, Pain, Loss of function in bitten area. The life-threatening complications of myocarditis and pulmonary oedema are known in red scorpion in India Hence, The case is reported to emphasize the proper management of scorpion especially in the rural areas.

**Key words:** Scorpion sting, Bradycardia, Scorpion sting shock, Managing stings, Cellulitis in Stings.

## INTRODUCTION

There are more than 1,400 species of scorpions worldwide, out of these around 5% are dangerous to human. Scorpion bites are common in rural places compare to the urban area due to the favorable place to hide in cracks of concretes and burrows. Almost all venomous scorpions belong to the large family called Buthidae.<sup>1</sup> They hunt during night and put out of sight in burrow during the day to avoid light. Scorpion stings vary considerably according to seasons generally the stings are increasing in frequency during summer season and lesser in winter. Scorpion sting causes a wide range of signs and symptoms from local skin reaction (severe pain and burning sensation at the site of sting) to cardiovascular changes ultimately to cardiac collapse, neurological and respiratory symptoms including the pulmonary edema. Systemic complications following scorpion sting are, Autonomic storm due to the venom, electrolyte imbalance, Encephalopathy, pulmonary edema and Metabolic acidosis Cardiovascular manifestations are more prominent with the sting of scorpion such as Hypertension, Bradycardia, Palpitations, Myocarditis, Cardiac arrhythmias etc. and

can be out ruled with the help of ECG abnormalities.<sup>2</sup>

The effective management of scorpion bite includes placing of ice bags at the site of scorpion sting to reduce pain and other signs of inflammation, immobilize the affected part to delay venom absorption and worsening of the patient condition, apply a topical or local anesthetic agent to the wound to decrease paresthesia and intolerable pain, prophylaxis administration of tetanus can be helpful, administration of systemic antibiotics (Ceftriaxone, Amoxicillin + Clavulanic acid) if signs of secondary infection occur especially at the site of sting, muscle relaxants for severe muscle spasms (i.e. benzodiazepines) oxygen inhalation may be helpful in pulmonary edema condition along with bronchodilators, intravenous fluids to prevent hypovolemia and shock, for hyper dynamic cardiovascular changes, administration of a combination of beta-blockers with sympathetic alpha-blockers are most effective in reversing this venom-induced effect.<sup>3</sup> Such as prazosin, nitroprusside, or angiotensin-converting enzyme inhibitors are better. Inotropic

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medications, such as digitalis have little effect or sometime may worsen the condition, while dopamine aggravates the myocardial damage through catecholamine like actions. The use of steroids to decrease shock and edema is of unproven benefit but should depend upon the condition and severity of patient Antivenom is the treatment of choice after stabilization and supportive care.

### Case Presentation

A 14 years old, male subject was present with chief complaints of intense pain, redness at the elbow of right hand, frightened and excessive sweating at the emergency department of a tertiary care teaching hospital. The patient and family gave history of stung by scorpion on right elbow. The inflammatory signs were present on the bitten site. His past medical and medication history was not significant in relation to case. On examination, there was change in rhythm of pulse and the pulse rate was markedly decreased. Bp was 100/70mm Hg, Pulse rate 46 beats / min, respiratory rate 15 c/min, blood sugar levels were 116 mg/dl, SpO2 levels were identified to be normal at 98. Later, after the interval of 2 h, repeated test shows almost normal Vitals after emergency management by potent analgesic and IV Fluids, obtained parameters were like blood pressure 114/70 mm of Hg, respiratory rate 18 – 20 c / min, SpO2 levels were identified to be normal at 98, the pulse rate was 64 beats/min but the ECG appeared to be normal throughout the duration of case observation. Again, the tests were run after intervals of 6 h most of his vital reports were normal but the subject was expressing a certain degree of pain. The site of bite was pale reddish in colour like hematoma later after two days it progressed to Cellulitis when patient was shifted to paediatric ward for observation and management.

### Investigations

- ✓ The ECG is the major laboratory test to rule out the cardiac condition, which is found to be normal over the period of hospitalization.
- ✓ Total blood count was found to increase with neutrophilia (13,700 cells/cumm) on the 3<sup>rd</sup> day after hospitalization, which might be due to the infectious condition i.e. Cellulitis.
- ✓ Serum electrolytes along with Renal and Hepatic function tests were normal.

### Treatment

The patient received the following treatment during the hospital stay

- ✓ Prazosin 0.25 mg q.i.d.
- ✓ Local Application of lidocaine topically.
- ✓ IV fluids 1 pint NS+ 1Pint DNS over 12 h.
- ✓ Inj Diclofenac 50mg IM b.i.d.
- ✓ Inj Amoxicillin+ Clavulanic acid 625 mg IV b.i.d.
- ✓ Tab Metronidazole 500mg PO t.i.d.
- ✓ Tab Chlorpheniramine maleate 4mg PO t.i.d.
- ✓ Dressing on each day on site of bite.

Prazosin is best choice of drug in the management of scorpion sting cases to prevent and treat acute pulmonary oedema. Alternatively the beta-blockers or ACE – inhibitors can be used or can be used in the combination with previous one. Amoxicillin was prescribed to treat the cellulitis condition at the site of sting and the patient is managed symptomatically.

### Outcome, Discharge and Follow-up

The drug of choice in the management of scorpion sting is Prazosin, at a dose of 0.25 to 0.5 mg (adult dose) orally and repeats the dose for every 6 h if the improvement is not noticed in the condition of the subject. The similar therapy was provided to the patient over the duration of hospital stay along with the other therapy. The patient was discharged after the 4 days of hospital admission. During discharge the vitals were stable, laboratory parameters were normal. The amoxicillin + Clavulanic acid along with metronidazole was continued for 5 more days after discharge.

### DISCUSSION

Patient appeared with scorpion envenomation need prompt care to stabilize the vitals.<sup>4</sup> Scorpion venom is an water soluble, Complex protein mixture which may affect different vital organs of human body like heart, blood vessels, lungs, and the decrease in the pulse rate which is the only change noticed along with local cellulitis, indicates that there may have been either due to the toxin mediated autonomic effect on the heart or the parasympathetic derive by the patient himself towards getting the treatment for the scorpion sting.<sup>5-6</sup>

As there were no alteration in the signs like development of fever, shock, convulsions, cyanosis, arrhythmias, tachycardia, hypertension or hypotension. ECG

parameters of the patient were normal and stabilized soon. But, other symptoms like pain, swelling, restlessness, bradycardia, were observed for a short period of time and got stabilized in a quick span of time after administration of prazosin. However, the physician discussed the alternate therapy for management with the application of steroids and administration of beta blockers.

## CONCLUSION

The patient reported in this case report has a history of scorpion sting and developed the symptom accordingly, but timely hospital admission and emergency service prevented the progression of the complication. The administration of prazosin along with antibiotic and symptomatic therapy stabilizes the patient. The close observation was done during the entire length of hospital stay. The patient was stabilized and discharged.

### Learning Points and Key Messages

- ✓ Scorpion venom is a potent sympathetic stimulator.
- ✓ Alpha-receptors stimulation plays a key role in occurrence of myocardial dysfunction and acute pulmonary oedema
- ✓ The prazosin is an alpha adrenoreceptor antagonist and it act as the antidote to the venom action.
- ✓ Time lapse between the sting and administration of prazosin determines the outcome and severity of patient.
- ✓ Scorpion stings can be prevented by clearing debris, trash and areas of scorpion inhabits, inspecting boots, proper bedding and careful during the work in susceptible places.<sup>5</sup>

## ABBREVIATIONS

**ACE- Inhibitors:** Angiotensin Converting Enzyme Inhibitors; **ECG:** Electrocardiography; **SpO<sub>2</sub>:**

Saturation of Peripheral Oxygen; **IM:** Intramuscular; **IV:** Intravenous; **PO:** Per Oral; **h:** Hour.

## Limitations of Case Report

- The ECG obtained over the duration of hospital stay was normal but the title reflects the bradycardia, hence the detailed observation is required for cardio-monitoring.

## SUMMARY

The Scorpion Stings can be effectively managed in hospital once the patient visit in hospital at time, The administration of Prazosin along with other symptomatic measures is key in reducing mortality and hospital stay.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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