

"Autonomic Storm" Following Scorpion Sting

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Abstract

Background: Scorpion stings are common in India, young children and sometimes the very old are at risk of serious complications. We report a case of 3 year old male child who developed autonomic dysfunction following scorpion sting. The child was treated successfully. *Conclusion:* This case report highlights the occurrence of priapism and myocarditis.

Keywords: Scorpion sting; Priapism; Myocarditis; Dobutamine; Prazosin.

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Introduction

Scorpion sting is common in rural population of South India. It is less fatal than snakebite. Scorpion sting in its severest presentation leads to respiratory distress and mortality is related to development of myocarditis and pulmonary edema. Immediately following a scorpion sting, an autonomic storm is responsible for hypertension, tachycardia and pulmonary edema. Cardiovascular effects are particularly prominent after Indian red scorpion stings. A 3 year old male child presented with priapism and myocarditis.

Case report

A 3 year old male child presented with a history of scorpion bite at his home. He developed severe pain at the bite site and vomiting. Child initially went to a nearby hospital where he was treated with intravenous fluids, antiemetics and referred to our centre. On arrival child had stable airway

without respiratory distress. His HR 138 bpm, blood pressure recorded was 126/84 mmHg. Child was irritable and diaphoretic; he had priapism.

Child was managed in the emergency room (ER) with oxygen via Jackson-Rees circuit, IV normal saline 5 ml/kg and Tab. Prazosin 0.5 mg. He was monitored in the ER for signs of myocarditis. Eventually child became hypotensive and developed pulmonary edema due to myocarditis. Child was managed with positive pressure ventilation and inotrope (dobutamine at 10 µg/kg/min). Child improved with the above management. He was gradually weaned off ventilation and inotropes and he was discharged on day 4.

Discussion

Scorpion stings are a major public health problem in India. Indian red scorpion (*Hottentotta tumulus*) is one the most toxic envenomation in the animal kingdom. Scorpion venom is a water soluble

antigen which produces both local and systemic reactions. 70% of maximum venom concentration in the blood is reached within 15 min. Fatality rate is highest in the first 24 hours after sting and mostly due to respiratory or cardiovascular failure following autonomic excitation. Catecholamine induced increase in myocardial metabolism and oxygen demand leads to myocardial ischemia and hypoperfusion. The alpha subunit of toxin acts by opening sodium channel and inhibiting calcium dependent potassium channels. The venom is a powerful arrhythmogenic agent. The venom can cause reduction of Na⁺ K⁺ ATPase in the myocardium. Features of cholinergic stimulation like vomiting, salivation, sweating, priapism and bradycardia are early diagnostic signs. Autonomic storm presenting with hypertension, tachycardia, pulmonary edema, cold peripheries is due to alpha receptor stimulation by the toxin. Terminal hypotension could represent catecholamine depletion.



Fig. 1:

Prazosin blocks post synaptic alpha 1 receptors. It should not be given as prophylaxis in children when pain is the only symptom (Grade I) It is given only when features of autonomic storm (Grade II)

are identified. Adequate fluid replacement and inotropic support improves cardiac function. PEEP helps by alveolar recruitment and by shifting edema fluid away from the alveoli. Anti venom therapy does not prevent the cardiovascular manifestation. It may decrease the duration of symptoms.

On basis of clinical manifestations scorpion envenomation is graded into four grades in India:

- Grade 1: Severe excruciating local pain radiating along corresponding dermatomes, mild local edema at the site of sting without systemic involvement.
- Grade 2: Signs and symptoms of autonomic storm characterized by parasympathetic and sympathetic stimulation.
- Grade 3: Cold extremities, tachycardia, hypotension or hypertension with pulmonary edema.
- Grade 4: Tachycardia, hypotension with or without pulmonary edema with warm extremities (warm shock).

Conclusion

Presence of priapism correlates positively with occurrence of myocarditis. Hence children with scorpion sting should be observed for myocarditis especially in the presence of priapism. Early institution of therapy at the onset of autonomic imbalance can prevent mortality.

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