

Scorpion Bite - A sting to heart

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ABSTRACT

Scorpion envenomation is an important public health hazard in tropical and sub-tropical regions. Envenomation by scorpions can result in a wide range of clinical effects including cardiotoxicity, neurotoxicity and respiratory dysfunction. Poisonous scorpion bites are common in Kokan regions. Here we report a patient from Nagpur who presented to us with cardiovascular manifestations and was treated with alphablocker and supportive management. Patient improved subsequently and discharged.

Introduction :

Scorpion envenomation causing various clinical effects depends on species of scorpion and lethality dose of venom injected at the time of sting. The incidence of scorpion bite in India is 0.6%, rising its toll in months of March to June and September to October at endemic areas of Western Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu. One of the most lethal species of scorpion is *Mesobuthus Tamulus* reported from Kokan regions.¹

Case Report :

This 28 years old female came with history of scorpion sting to little finger of left hand 4 hours prior to admission. She complained of tingling and burning at the sting site. She also had profuse sweating, chills and rigors. There was no history of chest pain, breathlessness, palpitations.

On examination her pulse was 100/min, regular and BP was 160/90 mm of Hg. SPO2 was 95% The respiratory, cardiovascular, and neurological examination was normal. On local examination there were no signs of cellulitis.

Investigations :

ECG showed HR-72/min, normal rhythm and tall tented T-waves. QTc was prolonged 492 msec, serum sodium was 144 and serum potassium was 3.9

meq/L. Her haemogram showed Hb 14 gm%, TLC 14,000, Platelets were 360,000. Kidney, liver functions and blood sugar was normal. 2D ECHO showed global hypokinesia with 40 % ejection fraction and mild mitral regurgitation. Serum CPK-MB was normal.

Patient was treated with prazosin 1 mg, ring block for pain in left little finger and other supportive line of management. Patient developed hypotension next day with BP 80/60 mm of Hg.

Patient was treated with Dobutamine infusion. After two days patient recovered from hypotension. ECG normalised and 2D ECHO was repeated which showed improvement in wall motion abnormality, improvement in ejection fraction (55%) and no evidence of mitral regurgitation. Patient was discharged on seventh day.

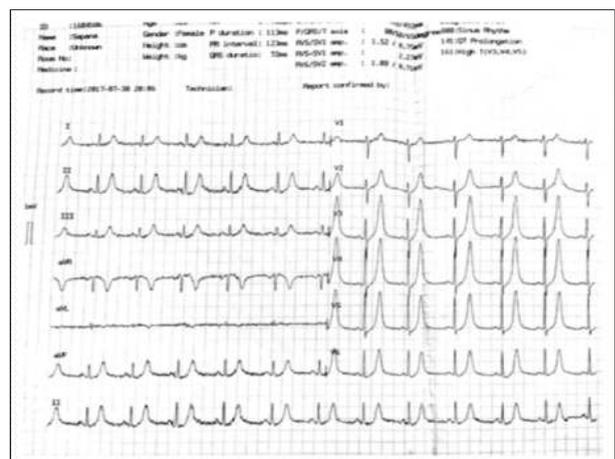


Figure 1 : ECG on admission showing arrowhead tented T waves

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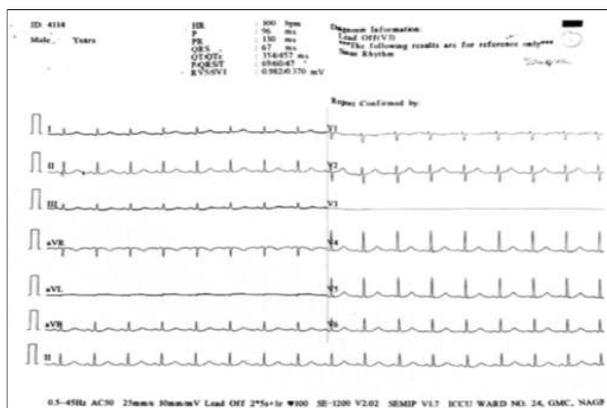


Figure 2 : ECG normalised after 2 days

Discussion :

The lethality of scorpion venom varies with the species. Scorpionidae evokes severe excruciating pain along with the corresponding dermatomes while sting with buthidae species can result in life threatening systemic effects. Scorpion venom is a cocktail of several low molecular weight basic proteins, neurotoxins, nucleotides, amino acids, cardiotoxins, neurotoxins, nephrotoxins, haemolytic toxins and phosphodiesterases.

Cardiovascular system is most commonly affected by venomous sting. The common manifestations are hypertension, cardiac arrhythmia, tachycardia, bradycardia, pulmonary edema, hypotension and shock. These are because of process of ongoing autonomic storm.

Our patient presented with tachycardia and hypertension initially, later on she developed hypotension after 4 hours which improved after vasopressor support.



Figure 3 : An Indian scorpion Mesobuthus Tamulus

ECG is the most important and diagnostic tool especially available at rural setting. No victim with systemic involvement shows normal ECG. ST segment and T-waves are frequently affected. Arrowhead tented T waves which look like Ashoka tree indicates acute injury, while tent shaped T-waves like Christmas tree indicate recovery. Prolonged QT interval and conduction defects restore to normal within one week but T-wave inversion persists for few weeks.

Echo shows poor global myocardial contractility 12-15 hours of sting, with low ejection fraction, decreased LV performance, trivial mitral regurgitation, abnormal diastolic filling for 5 days to four weeks. There is a good correlation between clinical improvement and return of the left ventricular wall motion towards normal due to Mesobuthus Tamulus sting.²

Our patient's 2-D Echo on admission also shows global hypokinesia and reduced ejection fraction (40%) and mild mitral which improved subsequently.

Scorpion envenoming syndrome results in a severe autonomic storm with a massive release of catecholamines, increased levels of angiotensin 2, an increase in glucagon, cortisol, thyroid hormones, either suppressed insulin levels or hyperinsulinaemia, hyperglycaemia, increased circulating free fatty acid levels

Scorpion antivenom is considered an effective treatment by many investigators worldwide. The other treatment modalities preferred are prazosin, dobutamine, captopril and insulin. Inotropic support with dobutamine is advocated to treat the cardiotoxicity. Captopril reduces the after load and relieves pulmonary edema and enhances cardiac output.³

Insulin has a primary metabolic role in preventing and reversing cardiovascular haemodynamic and neurological manifestations and pulmonary edema induced by scorpion envenoming. Administration of insulin glucose infusion to scorpion sting victims appears to be the physiological basis for the control of the metabolic response when that has become a determinant to survival. The modality of treatment is

continuous infusion of 0.3 u/g of glucose and glucose at the rate of 0.1 g/kg body weight / hour, with supplementation of potassium as needed and maintenance of fluid electrolytes and acid base balance is required. This treatment should be given at the earliest on admission and continued for the next 48-72 hours. Antiscorpion serum could also be given independently or along with insulin glucose infusion.⁴

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