

Case Report

Death due to Scorpion Sting – A Case Report

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ABSTRACT

Death due to scorpion sting is rarely encountered in regular forensic practice. Even though majority of the scorpion stings are non-fatal producing only local and systemic manifestations, occasional deaths do occur, especially in children. Deaths in adults are far less common.

This case report concerns one such fatal case of scorpion sting in an adult male.

Key Words: *Mesobuthus tamulus*; Red scorpion; Scorpion sting

INTRODUCTION

In India, cases of scorpion sting are quite common, particularly in rural and semi-urban areas. Many of the victims present with severe pain, swelling, redness and burning sensation over the affected part. Systemic symptoms such as sweating, urticaria, vomiting, hypertension, etc., occur in some cases. However, fatality due to scorpion sting is rare. Scorpions belong to Class Arachnida of Order Scorpionida, Sub-phylum Chelicerata. The most common species seen in India is *Mesobuthus tamulus* (red scorpion).¹

The Case: A 45-year-old male patient was admitted to Bowring and Lady Curzon Hospital, Bangalore Medical College, Bengaluru late one night with a history of scorpion sting.

Clinical Features: Pain over dorsum of right foot, bilateral ptosis. On examination, pulse - 140/min, feeble, BP - 90 systolic, diastolic not recordable, bilateral crepitations present. Patient not oriented, responded to painful stimuli

initially, later became unconscious. Blood test revealed neutrophilic leucocytosis and increased serum urea and creatinine. Arterial blood gas analysis showed features of acidosis. Chest X-ray showed bilateral infiltrates.

Diagnosis: Scorpion sting with systemic envenomation - non-cardiogenic pulmonary oedema and ARDS.

Treatment: Steroids, deriphylline, ceftriaxone, botropase, furosemide, metronidazole, dopamine, noradrenaline and midazolam. Survived for 40 hrs, but passed away eventually.

Autopsy Findings

1. External examination: A reddish brown discoloured area of skin present over dorsum of right foot, 2 cm below the great toe, measuring 1.2 cm × 0.5 cm (?sting mark).
2. Internal examination: Brain was congested with extensive petechiae over white matter. Lung surfaces revealed petechiae. Both lungs were oedematous, and cut section exuded blood with froth. Heart surface showed petechiae. Stomach contained 100 mL of haemorrhagic fluid and mucosa was congested. Some parts of the intestine showed areas of haemorrhage. Liver showed confluent areas of ecchymosis on its surface.
3. Histopathological examination of lung sections revealed severe congestion and haemorrhage. Alveoli showed haemosiderin-laden macrophages. Heart sections from right and left ventricular walls showed oedema, congestion and extravasation of RBCs, consistent with scorpion sting.

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4. Cause of death was opined as “Death due to complications of scorpion sting.”

DISCUSSION

Scorpions differ from insects mainly in the number of legs they possess (eight instead of six) and a fused cephalothorax. They belong to Class Arachnida of Order Scorpionida and Sub-phylum Chelicerata. Scorpions range in size from 9 mm to 21 cm. It is estimated that there are about 1752 species globally.² Scorpions prefer to live in areas where the temperatures range from 20 to 37°C (68 to 99°F), but may survive in freezing temperatures or even in the desert heat.^{3,4}

Venom: Of the 1000-plus known species of scorpion, only 25 possess venom that is dangerous to humans; most of these belong to the family Buthidae.⁵ Components are complicated and species specific, family Buthidae being the most potent. The main toxins include phospholipase, acetylcholinesterase, hyaluronidase, serotonin and neurotoxins. The most common species seen in India is *Mesobuthus tamulus* (red scorpion). Buthus species contain phospholipase-A, which causes gastrointestinal and pulmonary haemorrhages and disseminated intravascular coagulation.¹

Mode of Action: Affects sodium channels, and causes both adrenergic and cholinergic symptoms. Hyperkalaemia, hyperglycaemia and increased secretion of renin and aldosterone are characteristic features of stings by *Mesobuthus tamulus*.¹

Clinical Features

- Local: Pain, swelling, redness and regional lymphadenopathy.
- Systemic: Signs of autonomic stimulation: sweating, urticaria, salivation, vomiting, priapism, hypertension, mydriasis, brady/tachyarrhythmias and pulmonary oedema may develop within 2–3 hrs leading to death. Intracerebral haemorrhage resulting in hemiparesis from scorpion sting has been reported. Convulsions may occur.

Complications: Tachycardia, arrhythmias, hypertension, hyperthermia, rhabdomyolysis and acidosis. Envenomations by *Leiurus quinquestriatus* in Middle East and North Africa, by *Mesobuthus tamulus* in India, by *Androctonus species* along the Mediterranean and in North Africa and the Middle East, and by *Tityus serrulatus* in Brazil cause massive release of endogenous

catecholamines with hypertensive crisis, arrhythmias, pulmonary oedema and myocardial damage. Acute pancreatitis occurs with stings of *Tityus trinitatis* in Thailand. Central nervous system toxicity is often seen in stings of *Parabuthus* and *Buthotus* scorpions of South Africa. Tissue necrosis and haemolysis may follow stings of Iranian *Hemiscorpius lepturus*.⁶

Treatment

- Stings of non-lethal species requires at most ice packs, analgesics, antihistamines.
- Keeping the patient calm and applying pressure dressings and cold packs to the sting site decrease the venom absorption.
- A continuous IV infusion of midazolam controls the agitation, flailing and involuntary muscle movements.
- Hypertension and pulmonary oedema respond to nifedipine, nitroprusside, hydralazine or prazosin. Bradyarrhythmias can be controlled with atropine.¹
- Antivenom therapy - A scorpion antivenom (not yet approved by FDA) is available as an investigational drug only in Arizona (USA). IV administration of antivenom rapidly reverses cranial nerve dysfunction and muscular symptoms, but does not affect pain and paraesthesia.⁶ Scorpion antivenom effective against *Mesobuthus tamulus* has been introduced in India. The recommended dose is 1 vial (reconstituted in 10 ml of injection water) initially, followed by further doses if required.¹

Prevention of Scorpion Sting

- Stings of non-lethal species requires at most ice packs, analgesics, antihistamines.
- Clear debris and wastes from all areas of work or rest.
- Repellents may be used in areas of work or rest.
- Spraying a mixture of 2% chlorine, 10% DDT and 0.2% pyrethroid in an oil base is quite effective. Alternatively, use a mixture of fuel oil, kerosene and small amount of creosote.
- Inspect shoes, clothing and bedding for scorpions.
- Do not reach into dark corners, receptacles or boxes. Use a flashlight to check for scorpions.
- As a rule, if one scorpion has been encountered in a particular area, there will be others around. Females generally give birth to 50–60 young, which remain close to where they were born. It is important to locate and kill them all.

CONCLUSION

Although the incidence of fatal scorpion stings is relatively low, fatalities due to direct or indirect effect of scorpion sting can occur, especially in children. Hence, a thorough knowledge of clinical manifestations, pathophysiology, and complications of scorpion stings is essential for treating physicians and forensic experts.

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