CASE REPORT
MULTI-ORGAN DYSFUNCTION SECONDARY TO YELLOW
SCORPION STING
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Scorpion stings are common in tropical and subtropical regions. The history and clinical manifestation warrant urgent recognition and treatment. The incidence of scorpion stings in Pakistan is not known as there is no published data available in literature. We report our experience of a yellow scorpion sting victim who required intensive care admission after developing multi-organ dysfunction.

Keywords: Multi-organ dysfunction; Scorpion sting; ICU; Renal replacement

INTRODUCTION
Scorpionism is the second most common cause of human envenomation after snake bites in published literature. The leading cause of death related to scorpion sting is cardiac dysfunction with pulmonary oedema. Renal dysfunction is also not uncommon that may require extracorporeal support. Toxicity of scorpion venom varies between species and within the same species of scorpion in different geographic region. There is abundant literature available that describes the epidemiology and regional distribution of different species of scorpion but so far Pakistani literature is almost non-existent.

CASE REPORT
A 30-year-old woman, resident of Lasbella, Balochistan, had a witnessed yellow scorpion bite on left thigh in early hours of morning whilst seated on the ground for feeding her child. She complained of pain in the left flank. Initially a poultice of kitchen ingredients was placed on the bite area, but by the late afternoon she developed shortness of breath. She was taken to a general practitioner where she was given intravenous hydrocortisone and was discharged home. In the same evening, she passed black coloured urine. She went to local doctor and then referred to our hospital for further management. She reached our hospital around 18 hours after sting.

On arrival in the emergency room, she was agitated but responsive with time, place and person. Her vitals were as follows: non-invasive blood pressure (NIBP) 210/100, heart rate 130/minute and respiratory rate 40/min. She was requiring 10 litter of oxygen thru face mask with peripheral oxygen saturation 89–90%. On clinical exam, she was dehydrated and had generalized erythematous rash with blister formation over the left lower flank. Respiratory examination revealed bilateral coarse crackles up to the mid zones. Arterial blood gas showed 7.30/24/49/16 on 50% fractional inspired oxygen concentration (FiO₂). There was no history of bleeding except that she poured a small quantity of black urine. Her haematological and biochemical data are mentioned in table-1. Her chest X-ray revealed bilateral alveolar infiltrates. She was intubated for progressive respiratory failure and shifted to intensive care unit.

In the intensive care unit, her respiratory condition deteriorated further and required high ventilator parameters. She was managed with lung protective ventilatory strategy with high positive end-expiratory pressure (PEEP). Patient was sedated with propofol and morphine infusion. She was managed with labetalol infusion to keep the systolic blood pressure below 140 mmHg and intermittent doses of injection Lasix. Packed cell and fresh frozen plasma were transfused. Patient was initially started with broad spectrum antibiotic (Tazocin) that was subsequently de-escalated when septic screen result was reported negative.

On day 3rd in ICU, her course was complicated with acute coronary syndrome. Three sets of troponin I was mildly elevated (0.9, 0.6 & 0.2 ng/ml respectively). Transthoracic Echo showed moderate left ventricular dysfunction. She was managed conservatively. Continuous renal replacement therapy was started due to worsening renal failure and acidosis.

On 4th day in ICU, she started to improve clinically, labetalol was tapered down and closed. She was gradually weaned off on 7th day and then successfully extubated. Patient remained admitted in the hospital for a month for intermittent haemodialysis and then shifted to home.

DISCUSSION
The available data relating to scorpion bites and its epidemiology in Pakistan is very scarce. Only one study, we could have searched in the “PakMedinet” (Medical Database) that describe the use of prazocin in scorpion sting. The author illustrated that they received 24 cases of scorpion (detail not mentioned
and we also could not find the full text) sting and all were treated with Prazocin.

The hypothetical reason of rarity of available literature in Pakistan is either health care workers have less awareness about this native or it has never been shared in the national literature. The incidence may be high in remote villages or towns, but most of the time these patients are managed either by local Hakim or with traditional herbs or medicine at home.

Scorpion envenomation are the most important cause of arachnid envenoming and are responsible for significant morbidity and paediatric mortality in many parts of Central and South America, Middle East, Asia, and other northern and south Africa. Out of 1500 scorpion species, 30 are dangerous to human. About 250 000 scorpion events are registered in the Mexico every year, with the highest mortality rate in the world. 121 cases were reported in India from 1986–1989. Poisonous fauna is also prevalent in Iran and Saudi Arabia. There are 18 families in order Scorpionidae; while Buthidae family is the largest and is more toxic to human. Yellow scorpion (Leiurus quinquestriatus) is one of the members of Buthidae family and is considered as venomous scorpion. It is prevalent in this Subcontinent and Middle-East region. Scorpion venom contains neurotoxin, haemolysin, agglutinins, haemorrhagins, leucocytolysis, coagulins, ferments lecithin and cholesterin. Substance P stimulates the cutaneous pain fibers. The systemic manifestations of scorpion bite are a result of the intracellular influx of Na+ and Ca++ ions through sodium channels that lead to autonomic storm.

Severity of symptoms depends upon the size of victim, season and the time lapse between sting and hospitalization. Patient may present with hypertensive crises due to excessive sympathetic stimulation and adrenaline release from nerve endings at adrenal medulla, myocardial hypoperfusion, arrhythmia, cerebellar infarct and death. It is suggested that mechanism of acute cardiac dysfunction caused by scorpion sting is due to transient myocardial ischemia which is related to micro vascular spasm that may cause myocardial perfusion imbalance. Pulmonary oedema may develop between 30 minutes to four hours post sting. The nephropathy following sting is not rare and it can be due to pigment nephropathy, interstitial nephritis, rhabdomyolysis, vasculitis or direct toxin effect.

Scorpion anti-venom has been advocated as specific treatment for scorpion bite but its role is controversial. None of the report in literature showed that antivenom is effective in prevention or abolition of the cardiovascular morbidity. Alpha-receptors play vital role in the pathogenesis of cardiac failure and pulmonary oedema due to scorpion sting. Prazocin is a selective alpha-1 adrenergic receptor blocker, it dilates veins and arteriole. It also inhibits sympathetic outflow in central venous system.

Pulmonary oedema is a lethal and life threatening complication which need rapid intervention. The severity of pulmonary oedema is directly related to the dose of toxins, duration of intoxication, and perhaps to the velocity of rise of systemic arterial pressure following injection of scorpion toxins. The management is supportive therapy that includes Ca++ channel blocker, diuretic and sodium nitroprusside.

**Table-1: Haematological and biochemical data**

<table>
<thead>
<tr>
<th>Measured value</th>
<th>Normal value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin (Hb)</td>
<td>6.0</td>
</tr>
<tr>
<td>Haematocrit (HCT)</td>
<td>18.6</td>
</tr>
<tr>
<td>White blood cell (WBC)</td>
<td>51000 with left shift</td>
</tr>
<tr>
<td>Platelet</td>
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</tr>
<tr>
<td>Creatinine</td>
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</tr>
<tr>
<td>Lactate dehydrogenase (LDH)</td>
<td>17488</td>
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<tr>
<td>Creatinine phosphokinase</td>
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</tr>
<tr>
<td>Haemoglobin</td>
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</tr>
<tr>
<td>Prothrombin time</td>
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</tr>
<tr>
<td>Activated partial thromboplastin time</td>
<td>45</td>
</tr>
<tr>
<td>INR</td>
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</tbody>
</table>

**CONCLUSION**

Awareness of the scorpion envenomation need to be highlighted particularly in Pakistan as this is a life-threatening condition. Also, prompt and appropriated treatment approach can save human life from major catastrophe.

**REFERENCES**


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