

Priapism in Scorpion Stings within the Kingdom of Saudi Arabia: A Case Report

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Abstract

We report a 2-year-old Saudi boy who presented with an acute onset of asymmetric pulmonary oedema, moribund state and priapism. He was living in the desert and was referred to our hospital during the summer. He was mislabelled as a patient with sickle-cell disease as a very high number of patients come with a crisis of same presentation, and haemoglobinopathies are not uncommon in the Kingdom of Saudi Arabia. On careful examination of the child, there were multiple tiny lesions on both of his feet and abdomen which led to high suspicion of scorpion stings. The index of suspicion was high due to two reasons;(i) it was the summer, during which the incidence of scorpion stings is high and, (ii) the child was habitated in the desert area where scorpions are common. The child was successfully salvaged with symptomatic support and the specific anti-venom was given. The presentation of severe or heavy scorpion intoxication mimics the presentation of sepsis.

Keywords: Priapism, scorpion sting, erectile dysfunction, pulmonary edema.

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Introduction

Scorpion stings are a common emergency event in many parts of the world with a primary focus on regions of Northern Africa, Australia and various other desert areas which favour the living conditions of different types of scorpions. Acute pulmonary oedema due to scorpion sting is common, however, an asymmetric and unilateral pulmonary oedema is extremely rare with only a few reported cases. Priapism is an unusual presentation of scorpion stings and is usually diagnosed as a complication of sickle-cell disease which is prevalent in this part of the world.

Although the incidence of scorpion stings is higher in adults, the severity of envenoming is sig-

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nificantly greater in children, in whom the case fatality rate is up to ten times higher than that in adults. The aim of this case report is to highlight the importance of full clinical examination and early recognition of these fatal but fully salvageable cases.

Case Report

A 2-year-old Saudi male was referred to King Khaled Hospital, Tabuk, with a moribund condition. On arrival to the A/E, he was unresponsive and gasping. Few minutes later, he had a cardiac arrest. He was immediately incubated, shifted to the PICU and mechanically ventilated (Fig 1). Born at term with unremarkable birth history. His growth and developmental milestones were within normal range. He was immunised up to date. There was no past history of any congenital or chronic disease. There was no history of medication intake and infections prior to presentation. Child was living in a remote desert area. The boy slept on the floor of the house and woke up after 4 hours with sudden

onset of excessive crying, drooling of saliva, followed by an episode of vomiting and shivering. He was afebrile and developed uprolling of eyes with an episode of tonic-clonic seizures that lasted for few minutes. On arrival to the local health centre an intravenous line was maintained, and his airway was secured with an oxygen mask.

On examination his extremities were very cold with heart rate of 100 beats/min, blood pressure of 71/32 mm/Hg, despite IV fluids and supportive management. His general condition was very critical and he was in a state of shock. He was highly irritable and drowsy. His Glasgow Coma Scale (GCS) was 7/15. He had an attack seizures shortly after arrival in the PICU. There was a remarkably decreased air entry with bubbling crepitation on the right side of the chest. His genital examination showed priapism. There were multiple tiny marks on both feet and on the abdomen that was suspicious of scorpion sting as determined by its U-turn shape. His lab investigation results showed white blood cell count at $23.6 \times 10^9/L$, Haemoglobin at 12.6 g/dL, platelets at $423 \times 10^9/L$, a random blood glucose of 12.5 mmol/L, serum calcium 2.6 mmol/L, Sodium 140 mmol/L, potassium 2.94 mmol/L, chloride of 108 mmol/L, amylase of 183 U/L, creatinine phosphokinase (CPK) of 407 U/L, lactate dehydrogenase (LDH) of 466 U/L. First arterial blood gases (ABGs) showed pH at 7.28, pCO₂: 32 Torr, pO₂: 64.3 Torr, HCO₃: 15.5 mEq/L. Chest X-ray (CXR) showed unilateral pulmonary oedema (Fig. 2).

He was immediately loaded with the first dose of diazepam and started on the first dose of anti-scorpion venom as per national protocol and guidelines, and 10% calcium gluconate. He was on mechanical ventilator (Fig. 1). External warming was arranged with spotlight. He was started on inotropes. Second dose of diazepam and anti-venom was given with running IV calcium gluconate infusion then he started to stabilise and responding. Close monitoring was done by bedside team till 0800 hours. He was extubated at 0715 hours and initially kept on mask oxygen, after which he was maintaining O₂ saturation at 100% in room air after

the 20 minutes of extubated. Priapism had improved and also gradually fully relieved at 0800 hours (Fig. 3). He was shifted to the paediatric ward in stable condition and was fully conscious with systematic examinations were within normal limit at 1300 hours and discharged on the next day with baseline activity and detailed counselling to the parent.

Discussion

The most common cause of priapism in the Kingdom of Saudi Arabia (KSA) is sickle-cell anaemia¹. We report a case of priapism as a rare presentation of a scorpion sting. Priapism is a potentially painful medical condition in which the erect penis does not return to its flaccid state, despite the absence of both physical and psychological stimulation, within four hours. Priapism is considered a medical emergency which should receive immediate medical assistance. Priapism is potentially dangerous and can lead to impotency as a late complication. It is a myth, people that are envenomed by scorpions are anxious to crush it due to the false belief that the envenoming cannot be healed unless the offending scorpion is killed². There are two types of priapism: low-flow (ischemic) and high-flow (non-ischemic); 80% to 90% of clinically presented priapisms are low-flow disorders. Low-flow involves the blood not adequately returning to the body from the penis. High-flow involves short-circuit of the vascular system partway along the penis. Treatment is different for each type.

Scorpion stings are an acute health problem in tropical regions³. There appears to be regional variations in the clinical effects of scorpion stings, due to the different species of scorpions found in the various regions of the Arabian Peninsula.

The clinical manifestations due to scorpion stings are believed to be primarily due to complex interaction between sympathetic and parasympathetic stimulation, characterised by transient cholinergic (vomiting, sweating, bradycardia, priapism in males, ventricular premature contraction, salivation and hypotension) and prolonged sympathetic stimu-



Fig 1. Patient is on mechanical ventilator with priapism and receiving anti-scorpion venom.

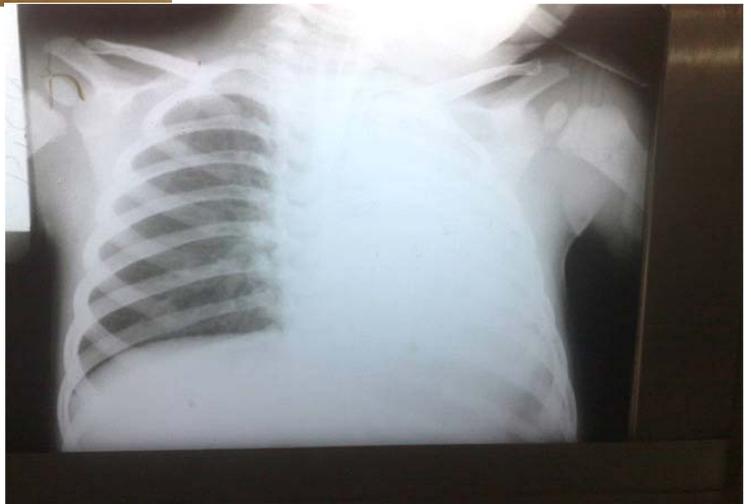


Fig 2. Chest X-ray showing left-sided unilateral pulmonary oedema.



Fig 3. Patient is out of ventilator support and priapism is in recovery phase

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lation (hypertension, tachycardia, pulmonary oedema, cool extremities and shock)⁴. Clinical presentation of severe scorpion intoxication are mimicking the presentation of severe sepsis with metabolic acidosis. Numerous studies have shown that scorpion venom induces a massive sympathetic activation by acting on pre-synaptic sympathetic terminals, creating high plasma concentrations of noradrenaline, which causes myocardial dysfunction and pulmonary oedema⁵. The importance of treating pulmonary oedema effectively with sodium nitroprusside or nitroglycerin infusate and dobutamine support cannot be over emphasized as this is a major cause of subsequent mortality⁶. Central nervous system effects commonly include confusion, agitation, ataxia, and myoclonic and dystonic movements (the restless child with roving eyes)⁷.

Our findings include unilateral pulmonary oedema and with features of shock leading to eventual coma. What makes us our case report different is the unorthodox presentation displayed by the patient who, as mentioned previously, includes unilateral pulmonary oedema and priapism. We initially assumed as a differential clinical diagnosis that this was an anaphylactic shock, meningioma cocci infection or a drug poisoning.

Unilateral pulmonary oedema is strongly associated with severe mitral regurgitation but in our case it was associated with a scorpion sting and only a few cases had been previously reported worldwide. Our case is the first case report with these associations within Saudi Arabia. Cardiovascular manifestations are due to the direct effects of excessive circulating catecholamine and cholinergic from autonomic hyper stimulation⁸. Serious envenomation is manifested by cardiovascular toxicity. Excessive sympathetic stimulation as well as direct effect of venom on the myocardium is responsible for the most serious cardiac manifestation of toxicity which leads to the unilateral pulmonary oedema in our case. This presentation is one of the rare association of myocardium with unilateral pulmonary oedema. The cardiovascular effects of severe toxic-

ity are the primary cause of death in severe intoxication of scorpion sting.

The two most venomous species of scorpions appear to be *Leiurus quinquestriatus* and *Androctonus crassicauda* of the family Buthidae. They are more commonly known as the 'yellow scorpion' and 'black scorpion', respectively^{9,1}. An observation where renin activity and aldosterone blood levels were measured in ten patients following scorpion envenomation by the scorpion *Leiurus quinquestriatus*, re-emphasises the importance of afterload reduction in the treatment of the cardiovascular manifestations of scorpion envenomation¹⁰. The clinical effect of the venom is also affected by the body mass and the general health of the patient^{4,11}. The very young and elderly are most susceptible to developing systemic symptoms of envenomation. Children are more often stung by scorpion due to their exploratory nature¹². In most circumstances, the sympathetic response predominates, resulting in what has been described as a 'sympathetic storm'¹¹.

Conclusion

Priapism is rarely present in scorpion stings which have severe toxicity. Scorpion stings are not uncommon within the kingdom of Saudi Arabia and various other parts of the world which include sub-Saharan regions as well as regions within Australia. An early diagnosis will lead to prompt and proper management of scorpion toxicity, but needs to be considered with a high index of suspicion in unknown poisoning with similar presentation of sepsis, furthermore, leading to excellent prognosis. Often misdiagnosis occurs in those cases where we are unable to identify when we observe priapism in the case of a scorpion sting due to the fact that these conditions are not usually observable in normal scorpion stings. Misdiagnosis mostly focuses on the patient having sickle-cell anaemia, however it should be noted that sickle-cell anaemia is rather simple to diagnosis and should not be confused with this rare presentation of a scorpion sting.

Consent

Written informed consent was obtained from the patient's legal guardian(s) for publication of this case report and any accompanying images.

Conflict of Interest

Authors have no conflict of interests and no grant/funding from any organisation.

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