Role of prazosin on cardiovascular manifestations and pulmonary edema following severe scorpion stings in Saudi Arabia

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ABSTRACT

We report the ameliorating effects of prazosin on the cardiovascular (CV) manifestations and pulmonary edema (PE) after treatment with antivenom (AV) failed to improve the conditions of scorpion sting patients. Three cases of scorpion envenoming, 2 children and one adult, were received at the Accident and Emergency Department of Al-Birk Hospital, Asir Region, Saudi Arabia. They presented to the hospital late with features of severe perspiration, tachypnea, restlessness, drooling of saliva, priapism, sinus tachycardia, PE, and shock like syndrome. When polyvalent scorpion (PVS) AV and intensive supportive treatment failed to show any improvement, prazosin was administered to the patients, which resulted in dramatic improvement in the conditions of the patients. We conclude that PVS AV may not be beneficial in all cases of scorpion envenomation, and prazosin may be an effective alternative for treating scorpion sting cases with CV manifestations and PE.

Scorpion stings (SS) are a common occurrence throughout the tropical and subtropical world, and the majority of cases present with local pain at the site of sting, and follow a benign clinical course. Severe intoxication may include cardiac and respiratory dysfunction leading to multi-system organ failure and death. Death associated with scorpion envenoming (SE) appears to be rare, as compared to the significant annual incidence of stings. In Saudi Arabia, the protocol implemented for the management of SS includes administration of antivenom (AV) raised against only 2 species of scorpions, Leiurus quinquestriatus, and Androctonus crassicauda, while more than 23 species have been recorded from different regions of Saudi Arabia, around 10 species were collected from Al-Birk Town, in the Asir region (Figure 1), imposing difficulties in identification by clinicians or victims due to the similarities of different species in their color (yellow or black). Until now, no medication has achieved acceptance as the gold standard for treating SS and AV is currently the focus of a wide debate regarding its actual efficacy, hence, alternative approaches, especially symptomatic treatment, are warranted. Based on recent insights into the pathophysiology of the cardiopulmonary consequences of severe scorpion envenoming, (SE) it was suggested that prazosin, commonly used to treat...
hypertension might be useful in the setting of severe SE.\textsuperscript{5}  
We report herein, the effects of prazosin in 3 scorpion stung patients with evidence of cardiac complications and pulmonary edema (PE) from Al-Birk town, in the Asir Region.

**Case Report. Patient One.** A 5-year-old Saudi boy was stung on the sole of the left foot by a scorpion in the Al-Birk area of Asir region. He presented to the emergency department one hour later with no mark of SS, no swelling, no tenderness, but severe excruciating, burning pain at sting site that was relieved by infiltration of local anesthetic (2% xylocaine). The clinical features were severe perspiration, tachycardia, tachypnea, restlessness, priapism, cold, clammy, hyperglycemia, and drooling of saliva (spitting saliva). The laboratory investigations showed oxygen saturation (SPO\textsubscript{2}): 65\%, heart rate (HR): 152 beat/minute [min] (60-100), respiratory rate (RR): 34 breath/min (15-20), random blood sugar (RBS): 187 mg/dl (70-125), bleeding time (BT): 2 min, prothrombin time (PT): 16 sec (10-15), activated partial prothrombin time (APTT): 30 sec, creatinine 0.4mg, urea: 40mg/dl (7-18), and potassium 3.4 mmol/L (3.3-5.). Five ampules (5 ml IV infusion) of AV with normal saline were administered, however, his condition continued to deteriorate and he developed PE. He was started with oxygen (O\textsubscript{2}) nebulization. The chest x-ray was normal but showed pulmonary haziness. He received furosemide 20 mg IV, and hydrocortisone 200 mg, IV fluids on flow and promethazine 25 mg injection. He developed convulsions the next day and was given diazepam IV (tachycardia, SPO\textsubscript{2} 100 and continuous drainage was established). He was conscious and stable for a short period of time, and then became restless and irritable, developed dyspnea, convulsions, PE, and haziness were seen in chest x-ray and his general condition deteriorated despite all supportive measures. Digoxin 250 \textmu g injections were given, without improvement and then aminophylline IV, was slowly administered and kept oxygen (O\textsubscript{2}) on flow. At this stage the pediatrician was advised to start prazosin 250 \textmu g oral and keep aminophylline (if necessary). The child totally improved from the symptoms within 3 hours.

**Patient 2.** A 24-year-old Saudi female was stung on the right foot by an unknown scorpion. She arrived to the Accident and Emergency (A&E) Department 3 hours after the sting. She was in shock and with severe pain and swelling on the right foot. Her blood pressure (BP) was 80/50 mm Hg and she was sweating profusely. Her extremities were cold and she was short of breath, with dyspnea and sinus tachycardia (ST). Her HR was 140 beats/min. She was given intravenous IV drip of normal saline rapidly with hydrocortisone (200 mg), and 5 ampules (5 ml) of scorpion AV. The chest x-ray showed...
cardiomegaly, and confirmed extensive PE. The initial ECG showed ST. She was admitted to the intensive care unit (ICU) and given oral prazosin 500 µg every 3 hours, she responded to prazosin and her vital signs (VT) became stable. She was kept under observation for another 24 hours and discharged the next day.

**Patient 3.** A one-year-old baby girl, was stung on her buttock and left foot by a scorpion, and the child's mother informed that the scorpion was big and yellow in color. She presented to the A&E Department, 2 hours after the SS, she was very excitable, crying all the time, and in shock with marked sweating, dehydrated, hypothermic (temp. 35.2°c), markedly drowsy (semi conscious), and with bradycardia. Her pulse rate (PR) was 65/min, and bilateral pulmonary crepitation was also observed (Figures 2 a & b). An IV fluid and 5 ampoules (5 ml) of AV were administered by IV infusion to the child on arrival at the A&E Department, but her condition deteriorated and she was admitted to the ICU. Humid O₂ inhalation, 250 µg prazosin (crushed orally) and aminophylline 37.5 mg IV were given. Dramatic improvement was seen in the condition of the child within 1 hour after prazosin administration. Three hours later prazosin was repeated, her BP was monitored regularly. After 24 hours the child became almost normal and was discharged.

**Discussion.** The 3 patients presented to the hospital 1-3 hours after SS. The symptoms presented included cardiogenic shock (tachycardia, hypotension and acidosis), respiratory distress (tachypnea), hypoxemia, PE, and ST. The CV consequences of severe SE presented in our cases were similar to as described before. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons. The patients received AV (usual treatment protocol) after the SS, without improvement in their conditions. However, treatment with prazosin resulted in dramatic improvement in their condition. The use of AV has been subjected to a great deal of controversy. First, queries on the effectiveness of AV in the treatment of scorpion envenomation and its clinical benefit have been raised over the last 2 decades for several reasons.
References


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