

Case Report

Scorpion sting envenomation presenting with pulmonary edema & subconjunctival hemorrhage: A case report

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Abstract

Scorpion sting is a common problem in villages of underdeveloped countries like India. It may present with mild local pain to severe systemic symptoms related to respiratory, neurologic and cardiovascular systems. The life-threatening complications like myocarditis and pulmonary edema are known with red scorpion in India. This condition requires urgent attention and ICU care from few hours to days. Delay in recognition and the hypoxemia increase the morbidity and mortality. Illiteracy, ignorance, poverty, traditional faith healers trying treatment in remote areas, lack of transport in difficult terrains and the non availability of ventilation facility in nearby hospital, add to delay in appropriate treatment. A young adult female patient was admitted in M.B. Government Hospital & R.N.T. Medical College, Udaipur (Rajasthan) with history of scorpion sting. She presented with pulmonary edema and hypotension & required ICU care. She was successfully managed with O₂ inhalation, cardiac support with inotropics, fluid balance & careful monitoring. Magnitude of problem, clinical presentation and management done is emphasized.

Keywords: subconjunctival hemorrhage, Scorpion sting, pulmonary edema

1. Introduction

Scorpion sting is common in rural population of India. Scorpion sting, commonly being less fatal than the snake bite¹, gets less attention in health setups. Mostly being non-fatal, victims present with mild to moderate symptoms and are attended by the traditional healers in villages.

Scorpion envenomation in humans is manifested as pain at local site, hypertension in mild cases & in its severest presentation it leads to respiratory distress. Mortality is related to development of myocarditis and pulmonary edema.²⁻⁵ The treatment of patients with hypotension and pulmonary edema in particular is not clear⁶.

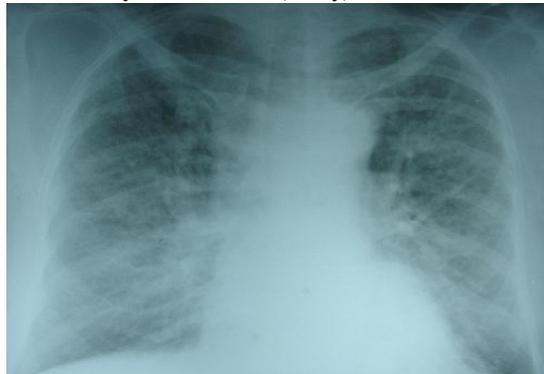
We report a patient who developed clinical & radiographically documented acute pulmonary edema, hypotension & subconjunctival hemorrhage after a scorpion envenomation.

2. Case Report

A 17 years old female with complaints of shortness of breath, cough and drowsiness, attended the emergency block of the Maharana Bhopal Government Hospital, Udaipur at 11:17 pm on 27/9/2010 (around 35 hours after receiving scorpion sting on her middle finger of right hand, while working in grass field). She was having only mild local symptoms like pain, burning and local tenderness for 7-8 hours following scorpion envenomation. After that she developed some difficulty in breathing and restlessness. She was brought to local hospital in village. Where she received IV antibiotic, deriphyllin, dopamine, hydrocortisone and IV fluids. Next day her shortness of breath increased markedly and blood pressure was falling despite pressure support, so Doctor referred her to our hospital which is a tertiary center.

She came with Pulse: 140/min; BP: 90/66 mm Hg on dopamine support; SaO₂: 78% RR: 28/min. She was having subconjunctival hemorrhage in right eye's bulbar conjunctiva, local swelling and tenderness over right middle finger due to scorpion sting & Bilateral crackles over chest. Chest X- Ray revealing diffuse, fluffy, bilateral infiltrates in lungs; E.C.G. showing sinus tachycardia, left axis deviation, ST elevation of >1mm in all chest leads.(Fig 1)

Fig 1: Chest X- Ray revealed diffuse, fluffy, bilateral infiltrates in lungs



She admitted In ICU & received inj ceftriaxone, inj hydrocortisone, inj dobutamine, inj furosamide, inj rabeprazol, Oxygen inhalation through oxygen mask, tab digoxin, & continuous monitoring of blood pressure, heart rate, ECG, SaO₂. Prazocin and NTG were not used as patient was in hypotension.

2D Echocardiography showing global hypokinesia of left ventricle, severe left ventricle dysfunction (ejection fraction 25%), mild MR and mild TR.

Her Hb: 15.8 gm/dl; TLC: 27300/cu mm; blood sugar: 163 mg/dl; blood urea: 41.2 mg/dl; serum creatinine: 0.62mg/dl; SGOT: 101 IU/L; SGPT: 70 IU/L; ALP: 100 IU/L; Serum Na⁺ 139 meq/lit; K⁺ 4.6 meq/lit; Urine complete: NAD; Bleeding time: 3 min; Clotting time: 4 min 30 seconds PT: 16.2 seconds [INR- 1.39]

Patient's blood pressure was continue to fall for initial 2 hours of admission and once it was even non recordable but with increasing rate of infusion of dobutamine, patient's BP started to recover and came in normal range by next morning and after it dobutamine infusion was tapered off & then stopped. Patient was maintaining SaO₂ in range of 85-92% with Oxygen inhalation through oxygen mask, so endotracheal intubation & mechanical ventilation were not considered. Patient recovered from stage of acute pulmonary edema and hypotension within period of 48 hours of admission. Repeat ECG & Chest X ray on 4th day of admission were within normal limits. Patient was discharged on 6th day of admission (on 2/10/10) without having any residual morbidity.

Fig 2: E.C.G. showing sinus tachycardia, left axis deviation, ST elevation of >1mm in all chest leads

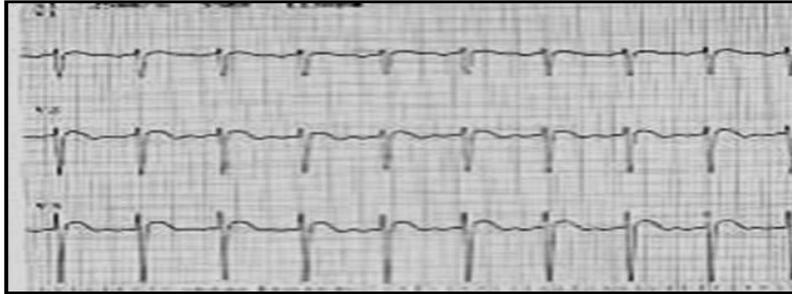


Fig 3: 2D Echocardiography showing global hypokinesia of left ventricle, severe left ventricle dysfunction (ejection fraction 25%), mild MR and mild TR

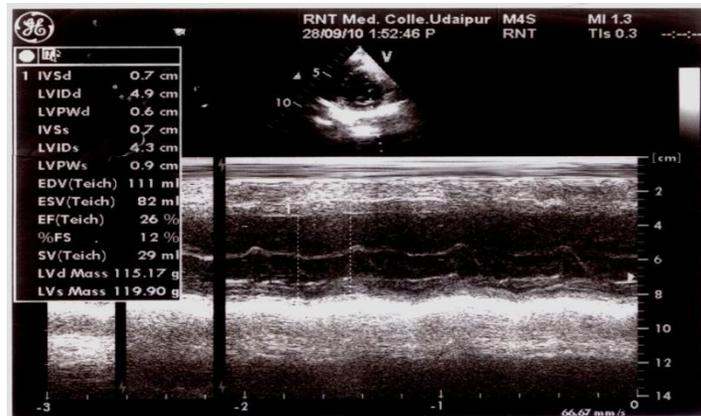


Fig 4: Sub Conjunctival Hemorrhage in Right Eye of Patient



3. Discussion

Scorpion stings are a major public health problem in many tropical countries. Out of 1500 scorpion species, 50 are dangerous to humans. Scorpion stings cause a wide range of manifestations, from several local skin reactions to neurologic, respiratory, and cardiovascular collapse.

Scorpion venom contains neurotoxin, hemolysins, agglutinins, haemorrhagins, leucocytolysins, coagulins, ferments, lecithin and cholesterolin⁷. This venom is a species specific complex mixture of short chain neurotoxic proteins, serotonin, hyaluronidase and various enzymes that act on trypsinogen^{8,9}. The toxin bind at cell membrane level to the voltage gated K⁺ channels, Ca²⁺ activated K⁺ channels and Na⁺ channels.⁹

Scorpion venom is a powerful stimulant of autonomic nervous system. The primary action of venom is through both sympathetic and parasympathetic postganglionic stimulation. In most of cases the sympathetic response predominates, resulting in “sympathetic storm”¹⁰ or “Autonomic storm”¹¹. Cardiovascular manifestations are due to direct effect of excess circulating catecholamines and cholinergics from autonomic hyper stimulation. The sympathetic system of the autonomic nervous system usually predominates, resulting in hypertension and tachycardia and in case of severe envenomation, dysrhythmias, left ventricular failure and pulmonary edema. Parasympathetic predominance may result in bradycardia, various grades of AV blocks, and non-cardiovascular manifestations such as priapism and hypersalivation.

Late onset pulmonary edema is due to acute myocardial injury and LVF caused by the toxin induced autonomic storm. This has been reported in 17%-34.8% cases from Saudi Arabia and India¹².

Factors like hypoxemia and hypercarbia contribute to pulmonary hypertension. Hyperoxygenation by positive pressure ventilation at high FiO₂ reduces pulmonary hypertension & to resolve pulmonary edema.¹³ PEEP helps by alveolar recruitment and by shifting edema fluid away from alveoli. Haemodynamic control with adequate fluid replacement and inotropic support (dobutamine) treats hypotension and improves cardiac function. Dopamine is not used because it further increases the catecholamine induced cardiac damage.¹⁴ Prazosin and NTG infusion with CVP guided fluid are given to reduce afterload and better cardiac output along with dobutamine infusion as recommended by Niranjana Biswal *et al*¹⁵. Bawaskar & Bawaskar (2000) also recommended prazosin medication to prevent & treat pulmonary edema, as prazosin (a post synaptic alpha-1 blocker) has the pharmacological properties that counteract the effects of excessive catecholamines¹⁶. Antivenom therapy was not used because it is species specific and works only when it is given immediately after the sting¹⁷.

Delayed hospitalization is associated with severe life threatening complications. This report emphasizes the complexity of clinical picture and need of intensive approach to timely diagnosis of pulmonary edema and initiation respiratory and inotropic support in ICU for better outcome.

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