FATAL SCORPION ENVENOMATION IN A DOG – A CASE REPORT

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[Received: 31.5.2016; Accepted: 05.12.2016]

A one year mongrel dog in recumbency was presented with the history of scorpion bite and frothy salivation. Treatment was initiated on emergency basis. During therapy the animal died stressing the fatality of scorpion sting.

Keywords: Scorpion, Dog, Therapy

Scorpions are nocturnal, able to survive in heat, drought, freezing conditions for weeks. Scorpion envenomation is an occupational hazard for farmers, farm labourers, villagers, migrating population and hunters. Scorpion stings are also lethal in pet animals. The lethal dose of scorpion toxin in dogs is 0.1 to 0.5 mg/kg. b.wt. Severity of envenoming is related to age, size of scorpion, body weight of dog and the time lapsed between sting and hospitalization (Cardoso et al., 2004). Reliable data is unavailable on scorpion envenomation in pets as most of them remain unreported. Scorpion poisoning results in an emergency condition.

Delay in attending the case may lead to untoward consequences and death. The present communication reports a case of fatal scorpion envenomation in a mongrel dog.

Case History and Observations

A one year mongrel was presented in recumbency with frothy salivation to Teaching Veterinary clinical complex, Gannavaram with the history of scorpion bite one hour back on right foreleg (Fig 1). Owner reported that, soon after scorpion sting, the dog exhibited severe vocalisation with pain and collapsed with frothy salivation.

Clinical examination revealed tachycardia (196 beats/minute), tachypnoea (56 /minute), cyanotic mucus membranes, sub normal temperature (98°F) with cold extremities with absence of response to external stimulus. Subtle erythema was noticed at the site of scorpion sting. The animal underwent blood collection for hemogram and serum biochemical profile. Estimation of blood glucose by using Glucometer revealed hyperglycemia (157mg/dL).

Treatment and Discussion

Therapy was initiated on emergency basis and was aimed to neutralize the effects
of circulating venom and to maintain vital functions. Ice packs were applied immediately at the site of sting. The dog was treated with oxygen supplementation via face mask and an anesthetic block was done around the stung spot with 2% lignocaine hydrochloride. Inj.melonex was administered @ 0.5 mg/kg. b.wt. intramuscularly and intravenous DNS administration was initiated at slow rate. Scorpion antivenom was given. Prazosin was given @ 0.1mg/kg. b.wt.

Scorpion toxic peptides block voltage dependent inactivation of sodium channels causing generation of action potentials in excitable cells. Consequently, due to persistent stimulation of autonomic nerves there will be massive release of neurotransmitters from adrenal medulla leading to stimulation of sympathetic and parasympathetic nerve endings, thus initiating autonomous storm as aslo reported by Bawaskar and Bawaskar (1998). Catecholamines induced effects of hypoxia and intracellular accumulation of calcium in myocardium leads to left ventricular systolic dysfunction which finally attributes to development of pulmonary edema. Pulmonary edema is a life threatening complication which develops within 30 minutes to 3 hours following a sting. Mahadevan (2000) opined that symptoms of dyspnoea, frothy sputum and cyanosis are usually fatal, as observed in present case.

Hyperglycemia as recorded in the present case following scorpion sting might be due to catecholamine surge and reduced insulin secretion. Ice packs were applied to reduce pain and to slow the absorption of venom by vasoconstriction. Oxygen therapy was initiated to maintain airway breathing and intravenous fluids were administered to combat hypovolemia as in other emergencies. Meloxicam was used as it avoids myocardial stress and delays absorption of toxin as also narrated by Devarbhavi and Murthy (2013). Prazosin, a post adrenergic receptor blocker, has 1000-fold more affinity to alpha-1 receptors. It reduces preload and left ventricular load, without raising the heart rate and rennin secretion. As a potent inhibitor of phosphodiesterase, prazosin causes accumulation of cGMP (a second messenger of nitric oxide) in vascular endothelium and myocardium, and inhibits the formation of inositol trisphosphate; as a result of this action, myocardial responses to sympathetic stimulation are attenuated. It also activates calcium dependent potassium channels inhibited by the venom. Prazosin enhances insulin secretion, resulting in the correction of hyperglycemia and hyperkalemia, it also helps to combat the anoxic myocardium similar to glucose, insulin, and potassium drip as also mentioned by Bawaskar and Bawaskar (1998).

Scorpion venoms reach their target too rapidly to be neutralised and antivenom within 30 minutes may reverse the effect. Systemic administration of scorpion antivenin could not alter the clinical course after 30 minutes as might have happened in this case. It would be best to neutralise the effects of an overstimulated autonomous nervous system through prazosin than to neutralise the toxin already bound to receptors on sodium channel, as was attempted without affirmative result simimilar findings were of Mahadevan (2000).

However, the case report can be used as base line reference for the treatment of scorpion bite. It was concluded that, despite of low case fatality, scorpion envenomation should be treated on emergency basis.

References