

SCORPION ENVENOMATION IN BUFFALO CALF- CASE REPORT

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ABSTRACT

Scorpion bit a three-month-old male buffalo calf of college sub-center in evening hours followed by rapid onset of clinical signs. Acute signs with lateral recumbency, paddling of legs, bellowing, nystagmus, frequent urination was observed in a calf. Clinical examination revealed subnormal body temperature (97.9°F), tachycardia (88/minute) and tachypnea (40/minute) with hyperemic conjunctival mucous membranes. Haematology showed severe leukocytosis ($17.65 \times 10^3/\mu\text{l}$) while biochemistry showed slightly elevated serum total bilirubin (0.79 mg/dl) with normal blood urea nitrogen (25 mg/dl) and creatinine (1.4 mg/dl) values. Centrifugation of both whole blood sample in EDTA vial and clot activator tube showed haemolysed plasma and serum. Based on the evidence of scorpion bite, buffalo calf was treated symptomatically with Inj. Dextrose 5% 1 lit iv, Inj. Dexamethasone 0.04 mg/kg iv, Inj. Diazepam 1 mg/kg iv and Inj. Chlorpheniramine maleate 0.2 mg/kg im. Clinical signs of pain, nystagmus, bellowing, and excitation

were subsided within half hour post-treatment while vital parameters were restored to normal after 12 h. A second treatment comprising of 1 liter Dextrose 5% 12 h later was followed by appreciable clinical improvement with resumption of normal suckling, feeding, and watering in treated calf. In conclusion, scorpion bite in bovines can be treated symptomatically with fluids, steroids, anti-allergic drugs, and sedatives in severe cases of nervous excitatory symptoms.

Keywords: *Bubalus bubalis*, buffalo calf, haemato-biochemistry, scorpion envenomation, treatment

INTRODUCTION

Scorpion bite in human is commonly prevalent in tropical and subtropical countries, generally harmless if it follows benign clinical course (Bawaskar and Bawaskar, 2012) while some species are responsible for acute life-threatening complications involving respiratory, cardiovascular and nervous systems (Ebrahim and Elaheh, 2008).

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Signs of acute syndrome after scorpion bite are characterized by widespread numbness, dysphagia, thickening of tongue, blurred vision, roving eye movements, seizures, salivation, dyspnea, acute pulmonary edema, haemolytic uremic syndrome, stroke, and death (Bahloul *et al.*, 2004).

Scorpions mostly prefers humid tropical and subtropical habitats often near or in human settlements. It is carnivore and nocturnal ambush predator hiding during day under stones, wood or tree barks (Bawaskar and Bawaskar, 2012). There is variation in the severity of syndrome based on the species of scorpion and composition of its venoms. Incidences of scorpion stings are common in India with reported clinical fatality rates ranging from 8 to 40%. Children are most common victims. Scorpion envenomation is clinically characterized by severe pain at the site of sting, vomiting, sweating, breathlessness and alternating high and low blood pressure and heart rates. Toxin exerts effects on pulmonary and cardiovascular system and could cause death from pulmonary edema (Bawaskar and Bawaskar, 1998). In humans, antivenins are less effective while blood pressure medications proved effective reducing mortality below 4% (Bawaskar and Bawaskar, 1986; Bawaskar and Bawaskar, 1998). Elaborate study about envenomation and therapeutic management in humans has been done in India (Bawaskar, 1982). Scorpion envenomation although well studied and reported in humans (Bawaskar, 1982; Bahloul *et al.*, 2004), reports are lacking in livestock animals (Cardoso *et al.*, 2004; Gajalakshmi *et al.*, 1978).

CASE HISTORY AND CLINICAL SIGNS

A three-month-old male buffalo calf from college sub-center suddenly started exhibiting

restlessness, bellowing, lying down, and frequent urination with recovery of live scorpion from the vicinity. All buffalo calves of same age group in the barn were reported to be healthy and with normal nervous demeanor. During clinical examination, calf was found in lateral recumbency (Figure 1) with intermittent paddling of legs and bellowing, nystagmus, and frequent urination. Efforts were made to locate the stung area but not located probably be due to dense hair coat and thick black colored skin of the buffalo calf. Vital parameters showed subnormal body temperature (97.9°F), increased heart rate (80/minute), increased respiratory rate (40/minute) with hyperemia of conjunctival mucous membrane (Figure 2).

Laboratory findings

Haematological analysis showed severe leukocytosis. Centrifugation of both plain blood sample in clot activator tube and one with EDTA showed haemolysed serum and plasma with reddish tinge indicative of certain degree of haemolytic crisis in the ailing calf. Serum biochemistry showed slightly elevated values of serum total bilirubin with normal values of urea nitrogen and creatinine.

TREATMENT

The ailing buffalo calf was treated with Inj. Dextrose 5% 1 lit iv, Inj. Dexamethasone 0.04 mg/ kg iv, Inj. Vitamin B complex 3 ml iv, Inj. Diazepam 1 mg/kg iv and Inj. Chlorpheniramine maleate 0.2 mg/kg im once. Clinical Signs subsided within 30 minutes after treatment with sedative. Calf was able to sit and get up comfortably in the morning but unable to suckle. Second treatment with Inj. Dextrose 5% 1-lit iv and Inj. Vitamin B

complex 3 ml iv was given in morning which was followed by increased alertness in calf followed by resumption of feeding and watering in afternoon hours indicative of clinical recovery.

DISCUSSION

Scorpion envenomation is an important medical emergency in subtropical and tropical countries causing severe envenomation in humans especially children (Ismail, 1995). Venom of scorpion is a complex of numerous toxins, which affect various body systems through biological properties as well as chemical composition. The clinical syndrome and its severity depend on several factors like species of scorpion, venom composition, victim's physiological reaction to the venom etc. (Mebs, 2002). Based on species and type of toxins, different pathologies were reported in humans among which sympathetic and parasympathetic stimulation, irritability, hyperthermia, vomiting, profuse salivation, tremors, convulsions were prominent. Most of the clinical signs in humans and experimental studies in animals showed excessive systemic inflammatory response to stings. Venoms and immune response to venoms have been incriminated in release of inflammatory mediators especially cytokines, which initiates cascade of events like fever, anorexia, vasodilation, hypotension and increased vascular permeability and lastly culminates in death of patient (Petricevich, 2010).

The symptoms of scorpion envenomation start immediately within few minutes and progresses to maximum in 5 h with massive release of neurotransmitters resulting in clinical signs like sweating, nausea and vomiting (Mebs, 2002). The commonly observed clinical signs

include mydriasis, nystagmus, hypersalivation, dysphagia and restlessness. In the present case of scorpion bite in a buffalo calf, clinical signs of restlessness, bellowing, nystagmus, and frequent urination were observed which are quite analogous to those reported in humans and experimental envenomation in dogs (Mebs, 2002; Radha Krishna Murty and Zare, 2001).

Vital clinical signs showed decreased body temperature with tachycardia and tachypnea in ailing calf. Elevation of heart rate and respiration rate are indicative of sympathetic activation in the ailing calf, which is in agreement with human scorpion envenomation (Petricevich, 2010).

Cases of scorpion envenomation in humans are numerous and based on the species and venom composition; the treatment protocols have been standardized to enhance the recovery rate (Bawaskar and Bawaskar, 2012). Cardoso et al. (2004) successfully treated case of scorpion sting in dog with local anesthetic block around bite site, and fluid therapy and observed uneventful recovery in 24 h in treated dog. The present case depicted in the article is first case reported in buffaloes, which was treated symptomatically with sedatives, fluids, anti-histaminics and steroids and showed good response to the treatment. Fluid therapy and steroids might prove helpful in maintaining circulatory volume and stabilization of patient while sedative might have decreased the restlessness and pain signs. Anti-histaminics might have played important role in reducing the release of allergic mediators in response to scorpion venom. Detailed investigations regarding biochemistry, blood pressure, cardiovascular and pulmonary function are essential to establish detailed pathology as well as standardization of treatment for scorpion envenomation in buffaloes.

In conclusion, scorpion envenomation

Table 1. Haemato-biochemical parameters in a buffalo calf with scorpion envenomation.

Sr. No.	Parameter	Case values	Normal values
1	Hb (g/dl)	12.5	8-15*
2	PCV (%)	32.28	24-46
3	TEC ($\times 10^6$ μ l)	8.18	5-10
4	TLC ($\times 10^3$ μ l)	17.65	4-12
5	Lymphocyte ($\times 10^3$ μ l) / (%)	9.64 (54.6%)	2.5-7.5
6	Neutrophil ($\times 10^3$ μ l) / (%)	6.87 (38.6%)	0.6-6.7
7	PLT ($\times 10^3$ / μ l)	582	100-800
8	Total bilirubin (mg/dl)	0.79	0.01-0.5
9	Direct bilirubin (mg/dl)	0.26	0.04-0.44
10	Indirect bilirubin (mg/dl)	0.53	-
11	BUN (mg/dl)	25	6-27
12	Creatinine (mg/dl)	1.4	1-2

(*Radostitis *et al.*, 2010).



Figure 1. Buffalo calf in lateral recumbency due to scorpion bite.



Figure 2. Hyperemic conjunctival mucus membrane in a buffalo calf due to scorpion bite.



Figure 3. Recovered buffalo calf after treatment for scorpion envenomation.

in buffaloes can be diagnosed based on circumstantial evidence and can be successfully treated symptomatically with prompt attention for uneventful recovery.

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