CASE REPORT

Therapeutic Management of Snake Bite in a Surti Buffalo

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Snake bite is an acute life-threatening and hazardous time-limiting medical emergency common in animals such as cattle, sheep, goats and dogs in areas with heavy rainfall and humid climate. There are nearly 216 species of snakes in India, of which 60 are considered poisonous (Gupta and Peshin, 2014). The most poisonous, medically important species of Indian snakes are distributed widely throughout the country. Nearly one lakh animals fall prey to venomous snake bites every year. Snakes do not attack or rather prefer not to bite animals unless they are disturbed. Cattle, buffalo and horses are also attacked on the head while grazing. Russel's viper is one of the most common poisonous snakes in the Indian subcontinent among the four poisonous snakes, viz., *Naja naja* (Indian Cobra) and *Bungarus caeruleus* (Indian Krait), *Daboia russalii* (Russells Viper) and *Echis carinatus* (Saw scaled viper) (Alirol *et al.,* 2010). Snake bite with envenomation is an emergency medical condition that requires immediate initiation of proper treatment (Vijaykumar, 2001). The present paper describes Russells Viper snake bite in a buffalo and its therapeutic management.

Case History and Clinical Observations

A 3-year-old female Surti buffalo was bitten by Russell viper during early morning hours in the shed at Reproductive Biology Research Unit (RBRU), Anand as observed by the animal attendant and picture taken by him (Fig. 1). Subsequently, there was a history of anorexia, dullness salivation and swelling of the lower mandibular region. Clinical examination revealed congested conjunctival mucus membrane, 100.5°F rectal temperature, tachycardia, dullness, salivation, respiration distress, edematous swollen mandibular region and pain on palpation of the swollen area (Fig. 2).

The blood sample was collected in ethylene diamine tetra acetic acid (EDTA) containing tube for complete blood count (CBC) using an automatic whole blood analyzer (Abacus Junior Vet-5), and in clot activator tube for serum biochemical parameters like total protein, aspartate aminotransferase (AST), alanine aminotransferase (ALT), blood urea nitrogen

Fig. 1: Russells viper found at site

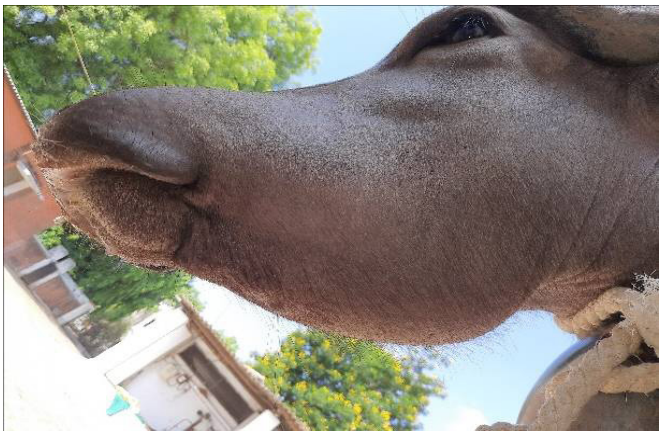

Fig. 2: Swelling of Mandibular region

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Table 1: Hemato-biochemical analysis before and after treatment of snake bite in a buffalo.

Parameter	*Reference Range**	*Pre-treatment*	*Post-treatment 4th day*
Hb (g/dL)	8–15	11.60	11.30
TEC ($\times10^6$/µL)	5–10	8.99	8.78
PCV (%)	24–46	43.08	40.21
TLC ($\times10^3$/µL)	4–12	10.46	8.52
Lymphocytes (%)	62–63	50.40	63.32
Neutrophils (%)	15–33	44.40	30.35
Monocytes (%)	0–8	5.00	6.12
Eosinophils (%)	0–20	0.30	0.21
Total Protein (g/dL)	5.25–9.00	6.09	7.11
ALT (U/L)	14–38	45.56	38.50
AST (U/L)	51–169	201.74	165.56
Creatinine (mg/dL)	0.5–2.2	1.99	1.73
BUN (mg/dL)	10–25	21.49	24.15

*Susan and Michael (2016)

(BUN) and creatinine by using clinical serum biochemistry auto-analyzer (CKK 300) (Table 1). The case was diagnosed as Russell viper snake bite based on history, clinical examination, and laboratory examination.

Treatment and Discussion

The affected buffalo was treated with polyvalent snake venom antiserum 1 vial (20 mL) with 1000 mL of normal saline intravenously (IV) followed by injection dexamethasone phosphate @ 0.5 mg/kg b. wt. IV, tetanus toxoid (5 mL, IM), Injection Tribivet (10 mL IV) and 500 mL of 5% dextrose IV on the first day. Subsequently, the animal was continuously monitored during follow-up. The swelling subsided, and the buffalo recovered fully and was active on 3rd day of treatment. Blood samples collected again on 4th day of treatment revealed a normal hemato-biochemical profile (Table 1).

Generally, the animals are more likely to be bitten by snakes on the jaw (Banga *et al.,* 2009) as was observed in this case. The clinical signs noted in the present case were in line with Chandrashekar *et al.* (2016) and Senthilkumar *et al.* (2018). The hematological analysis revealed decreased lymphocyte count and increased neutrophils count and serum ALT and AST on '0' day, which came down to normal level after the 4th day of treatment (Table 1). Similar findings were also reported by Kachhawal *et al.* (2016) and Senthilkumar *et al.* (2018). The snake venom composition is highly complex, containing many proteins, enzymes and strongly basic polypeptides (Jiminez-Porras, 1968). A treatment with polyvalent snake venom antiserum and dexamethasone and tetanus toxoid have earlier been tried successfully to treat snake bite envenomation in dogs and buffalo (Kumar *et al.,* 2016; Chandrashekar *et al.,* 2016; Kachhawal *et al.,* 2016; Senthilkumar *et al.,* 2018).

In brief, a Surti buffalo bitten by Russell viper (*Daboia russalii*) during night hours with clinical signs of bite, including painful edematous swelling of the lower mandibular region was successfully treated with a polyvalent anti-snake venom serum with 5% DNS, tetanus toxoid, dexamethasone and fluid therapy for three consecutive days.

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