

## Snake bite in dogs and its successful treatment

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### Abstract

Two dog viz. Labrador and Alsatian cross were presented to the peripheral hospital with a history of frothy salivation, dull, depressed, abnormal gait and with recumbent position. They were diagnosed for snake bite based on the history and physical examination. The hematological parameters showed reduced values of hemoglobin, packed cell volume and increased total leukocyte count. The biochemical values showed elevated levels of alanine aminotransferase and creatinine. The successful treatment was done with anti-snake venom, fluid, corticosteroid, muscuranic receptor antagonist and antibiotic with careful monitoring.

**Key words:** Labrador, Alsatian cross, snake bite, treatment

### Introduction

Snake bite in animals generally occurs during grazing or hunting or while playing in the garden. Most of the cases of snake bite have been reported in dogs and horses (Garg, 2000). Poisoning from snake venom in animals is an emergency which requires immediate attention or otherwise delayed and inadequate treatment may lead to untoward consequences. The present paper describes snake bite in canines and its therapeutic management.

### Case history and observation

Male Labrador retriever aged about two and half years and female Alsatian cross aged about two years with the history of frothy salivation, dull, depressed, abnormal gait and with recumbent position were brought to private clinic for treatment. According to the owner, the dogs were usually placed in the garden and had a history of snake problem.

On physical examination of the dogs revealed cyanotic swollen areas with fang marks on tip of nose in case of Labrador and on the left fore paw of Alsatian cross respectively were observed.

### Diagnosis

Based on the history and physical examination of the dogs, the cases were suspected for snakebite. The clinical parameters like rectal temperature, pulse and respiratory rate of Labrador and Alsatian cross showed 36 °C, 44 per min and 18 per min and 36.2 °C, 40 per min and 20 per min respectively. Further

examination of both the cases revealed presence of cold extremities and reduced reflexes.

The blood samples from both the dogs were collected with and without ethylene diamine tetra acetic acid (EDTA) for hematological parameters like haemoglobin, packed cell volume and total leukocyte count estimation and biochemical parameters such as alanine aminotransferase and creatinin estimation.

The hematological parameters revealed decreased hemoglobin concentration (12.6 g/dl, 13.2 g/dl) and packed cell volume (35%, 40%) and increased total leukocyte count (18000/ml, 22000/ml) in Labrador and Alsatian cross respectively. The biochemical values showed elevated levels of alanine aminotransferase (80 IU/dl, 90 IU/dl) and creatinine (2.2 mg/dl, 1.96 mg/dl) in Labrador and Alsatian cross respectively.

### Treatment

Both the dogs were treated with lyophilized polyvalent anti-snake venom (Serum institute of India). The clear supernatant obtained after dilution was slowly administered intravenously in a shot of 1ml at an interval of 3-4 minutes up to 10 ml. In addition, 500 ml of 5% DNS (Dextrose Normal Saline) each was administered intravenously to both the dogs. Dexamethasone (Dexona, Cadila pharma) at the dose of 2mg/kg was administered i/v and Atropine sulphate (Tropine, Neon Labs) at the rate of 0.04mg/kg i/m. Further Enrofloxacin (Enrocin, Ranbaxy) at the dose of 5 mg/kg, i/m and tetanus toxoid (Serum institute of India) 2ml i/m were given. Then the animals were kept under observation.

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After 1 hr it was observed that Labrador was passing blood in the urine, however, no such clinical sign was noticed in the other dog. Botropase (Juggart) 1ml i/v was administered to Labrador dog. After 5 hrs the dogs were active, normal and there was no relapse of the signs was observed. The antibiotic therapy was continued for 5 days to both the dogs. After one week of treatment, it was confirmed that the dogs were recovered uneventfully.

#### Discussion

Snake venoms are complex mixture of proteins and peptides, consisting of both enzymatic and non enzymatic compounds. Snake venoms also contain inorganic cations such as sodium, calcium, potassium, magnesium, and small amounts of zinc, iron, cobalt, manganese, and nickel. The other components of snake venoms are glycoproteins, lipids, and biogenic amines, such as histamine, serotonin and neurotransmitters (catecholamines and acetylcholine) (Klaassen, 2008). Clinical signs such as frothy salivation, dullness muscular weakness with abnormal gait observed in the present study can be attributed to the enzymatic and non enzymatic compounds in the snake venom. According to Klaassen (2008), hyaluronidase cleaves internal glycoside bonds in certain acid mucopolysaccharides resulting decreased viscosity of connective tissues allowing other fractions of venom to penetrate the tissues. The cyanotic edema observed at the site of bite may be attributed to enzyme hyaluronidase which acts as a spreading factor.

Passing of blood in the urine observed in Labrador dog can be hypothesized to the haematotoxic effect of snake venom which may interfere with many components of the haemostatic system (Wolff, 2006). Moreover, the toxins such as the haemorrhagins cause spontaneous bleeding in the gingival sulci, nose, skin

and gastrointestinal tract (Warrell and Fenner, 1993). However, such bleeding tendencies were not noticed in either of the two cases except hematuria in Labrador dog.

The alterations in the hematological parameters might be due to damage to the blood cells by snake venom. The increased biochemical values like alanine aminotransferase and creatinine may be due to the hepatotoxic and nephrotoxic effect of snake venom (O'Shea, 2005).

Sometimes lyophilized polyvalent anti-snake venom may cause anaphylactic reactions (Sai *et al*, 2008) to overcome the untoward effect to antivenom, dexamethasone injection was given to the dogs. However, in the present study corticosteroid was preferred over antihistamines as in certain times it potentiates the toxic action of the snake venom (Singh 1980). Prophylactically, Tetanus toxoid and broad spectrum antibiotic were administered to the dogs, as the fangs of the snake are supposed to be contaminated with various types of bacteria.

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