



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2019; 8(4): 145-146

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www.thepharmajournal.com

Received: 09-02-2019

Accepted: 13-03-2019

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Medical management of snake envenomation in a Rottweiler dog

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Abstract

Dogs are most commonly exposed to snake bites while playing in garden or during hunting. A 2 years old Male Rottweiler dog was presented with salivation and swelling in the jowl region. Clinical examination revealed normal temperature, respiratory rate and heart rate. Whole Blood Clotting time was prolonged and haematology revealed neutrophilia. Animal was treated with polyvalent snake venom antiserum, fluids, tetanus toxoid, antibiotics, corticosteroids and diuretics. Animal made uneventful recovery after 5 days. This paper presents successful medical management of snake envenomation in a Rottweiler dog.

Keywords: rottweiler, snake bite, whole blood clotting time, antivenom

Introduction

Snakebites and insect stings are most commonly encountered bio toxins (Mount, 1989) [6]. Among the domestic animals, dogs are most frequently attacked and killed by snakes (Osweiler, 1996) [8]. Dogs are most commonly attacked while playing in garden or during hunting. In dogs, head and limbs are frequently exposed to snake bite. The clinical effects are more severe in small animals when compared to large animals (Garg, 2002) [4]. Snake bite with envenomation is an emergency which usually requires immediate attention, proper examination and emergency treatment (Vijaykumar *et al.*, 2001) [9].

Case history and observations

A 2 years old Male Rottweiler dog was presented with the history that animal was playing in garden and showed salivation (Fig.1) with swelling in the jowl region (Fig.2). Clinical examination revealed rectal temperature of 38.1°C, respiratory rate of 22/min, heart rate of 98/min and pain on palpation of jowl swelling. Blood sample was collected from saphenous vein and subjected to Whole Blood Clotting Test (WBCT) and haematological analysis. After 20 mins, the tube was inverted to determine whether clot has formed or not. The test was positive and clot was not formed even after 30 mins. Haematological analysis revealed normal haemoglobin – 12.4 g/dl and neutrophilia (82%) with normal lymphocyte (15%) and Eosinophil (1%). Based on history, clinical signs and laboratory findings, the case was tentatively diagnosed as snake envenomation.

Results and Discussion

The animal was kept undisturbed and it was made to lie on lateral recumbency. The dog was treated intravenously with polyvalent snake venom antiserum (10 ml) (Bharat Serums and Vaccines Limited, Ambernath) diluted in normal saline over the period of one hour. Each ml neutralizes 0.6 mg of cobra venom, 0.45 mg of common krait venom, 0.6 mg of russell's viper venom and 0.45 mg of saw-scaled viper venoms. Further, Inj. Enrofloxacin @ 5 mg/kg b.wt i.m, Inj. Dexamethasone @ 2mg/kg b.wt i.m, Inj. Frusemide @ 2mg/kg b.wt i.m and Inj. Tetanus toxoid – 2 ml i.m were also administered. On second day, slight reduction in swelling, whole blood clotting time was more than 25 mins and administered with second dose of polyvalent snake venom antiserum (10 ml), fluids, antibiotics and anti-inflammatory. On third day, swelling was reduced to maximum extent, improvement in food intake and whole blood clotting time was less than 20 mins. Dogs was treated with fluids and antibiotics for next three consecutive days. Animal showed uneventful recovery.

Snake venom are composite mixture of many enzymes, proteins and peptide compounds (Chandrashekar *et al.*, 2016).

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Snake venoms usually contains two broad classes of toxins - neurotoxin (mostly found in elapids) and haemotoxin (mostly found in viperids) (Garg, 2002) [4]. Neurotoxin act at molecular levels, by disrupting the neuromuscular junctions and limiting the muscular activity while haemotoxin cause tissue destruction in body systems besides their effect on circulatory system (Kumar *et al.*, 2016) [5]. Chandrashekar *et al.* (2016) reported that bite and envenomation commonly occurs in dogs which play in the garden which is in accordance with the history in present study. Clinical signs of salivation and swelling in the jowl region might be due to the enzymatic and non enzymatic compound present in the snake venom (Turkar *et al.*, 2016) [11]. Swelling in the jowl region may be attributed to enzyme hyaluronidase which act as a spreading factor. The 20 mins WBCT is a simple bedside test of coagulopathy to diagnose snake envenomation and rule out snake bite (Sasikala *et al.*, 2016) [9]. Neutrophilia observed in the present case could be due to systemic infection as fang marks and oral cavity has bacterial contaminants (Mwangi *et al.*, 2014) [7].

Species of the snake was not identified by owner so polyvalent snake anti-venom was preferred in the present case as it provides protection against the venom of big four (Common cobra, common krait, saw scaled viper and russell viper). In present study, adrenaline injection was made available in order to counteract possible anaphylaxis. Bailey and Garland (1992) [2] recommended polyvalent antivenin, tetanus toxoid and broad spectrum antibiotics for the treatment of snake envenomation. Dexamethasone was administered to overcome the untoward action of antivenom but its use in snake bite is still debated (Ananda *et al.*, 2009) [1]. The administration of tetanus toxoid provides protection against tetanus spore that might have entered animal body from contaminated snake mouth (Suchitra *et al.*, 2010) [10].



Fig 1: Rottweiler showing salivation and open mouth breathing



Fig 2: Rottweiler showing swelling in jowl region

Conclusion

After treatment with two doses of polyvalent snake venom antiserum, dog showed uneventful recovery. Thus, Snake envenomation in a Rottweiler dog was successfully managed medically.

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