



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2020; SP-9(12): 77-78

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www.thepharmajournal.com

Received: 27-08-2020

Accepted: 08-10-2020

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Cobra envenomation and its management in a Doberman dog: A case report

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Abstract

Snake envenomation are frequently presented to veterinary practitioners in all around the world. In dogs, most of the snake bites are noticed in the head and neck and also in limbs by playing and attacking nature of the dogs. A 12 years old female Doberman was presented to the Small Animal Emergency Unit of Veterinary Clinical Complex, VCRI, Orathanadu with a history of snake bite. Animal on lateral recumbency, edema in face, frothy salivation and fang mark near muzzle. It was diagnosed as Cobra envenomation based on the snake identification. The hematological parameters showed anemia and neutrophilia. Elevated Creatinine level in serum biochemistry. Dog was treated by polyvalent anti-snake venom and oxygen supplementation and supportive with tetanus toxoid, antibiotic. Dog showed uneventful recovery.

Keywords: Cobra envenomation, polyvalent anti-snake venom, Doberman

Introduction

Major venomous snakes in India are the Spectacled Cobra (*Naja naja*), Common Krait (*Bungarus caeruleus*), Russell's Viper (*Daboia russelii*) and Saw-scaled Viper (*Echis carinatus*), in which hemotoxic envenomation can be diagnosed easily in field by whole blood clotting time. The proteroglypha (fixed-fang snakes) generally have neurotoxic venoms. Spectacled Cobra venom belongs to this category. These venoms affect the nervous system, making the prey unable to breathe. Hence blood clotting within 20 minutes and presence of respiratory distress is suggestive of neurotoxic envenomation. Dogs are aggressive and territorial, they tend to attack predators like snake and get bitten in face and other extremities. It is often lethal due to respiratory failure. In Cobra envenomation results paralysis of respiratory muscles due to the toxin which binds to the nicotinic receptors in the post-synaptic membrane and preventing binding of acetylcholine in muscles nerve endings (Karalliedde, 1995) [3]. Bites from a venomous snake can produce a number of symptoms which includes localized swelling, pain on bitten area and may cause convulsions, vomiting and even paralysis. Neutralizing the toxin by Anti-snake venom is the only specific treatment available for the snake envenomation. Likewise the present case was diagnosed as cobra envenomation in a Doberman dog and successfully managed with polyvalent anti-snake venom with supportive and discussed details about its patho-physiology.

Case presentation and Observation

A 12 years old female Doberman was presented to the Small animal emergency unit of Veterinary Clinical Complex, VCRI, Orathanadu with a history of snake bite. Animal on lateral recumbency, edema in face, frothy salivation and fang mark near muzzle. The owner had a picture of snake which had bitten the dog. The snake was identified as spectacled cobra based on presence of the hood with dark spec like mark on the dorsal side of its head. Dog had oedema in face, fang mark near muzzle, frothy salivation, ptosis (drooping of eyelids), labored breathing, numbness sensation in the extremities and spasm of limbs. Temperature was 38.3 °C, respiratory rate and heart rate were 12/min and 45/min respectively. Radiograph of chest revealed absence of pulmonary effusion. Blood clotting time was 8 minutes. Whole blood and serum samples were collected. The dog was treated with one vial (10ml) of Polyvalent Anti-snake venom freeze-dried dissolved in 500 ml of normal saline administered slow intravenously and observed for any reactions carefully every 5 min for first 30 min and then after administration of complete dose, animal is observed for manifestation of any reaction. In addition, Cefotaxime @ 25mg/kg, I/V, and Inj.

Tetanus toxoid 1ml (8 Lf -flocculation units) IM was administered along with mechanical ventilation.

Results and Discussions

According to Klaassen (2008) ^[4], hyaluronidase cleaves internal glycoside bonds in certain acid mucopolysaccharides resulting in decreased viscosity of connective tissues which allow other fractions of venom to penetrate the tissues. The swelling observed at the face may be attributed to enzyme hyaluronidase which acts as a spreading factor. Cyanotic swollen areas with fang marks on tip of nose may be due to local necrosis since oral cavity of snake has bacterial contaminants (Mwangi *et al.*, 2014) ^[5].

The hematological parameters showed anemia and neutrophilia in this case might be due to systemic infection as snake fangs and oral cavity has bacterial contaminants (Blaylock, 2001) ^[2]. Elevated Creatinine level in serum biochemistry is attributed to nephrotoxic effect of snake venom (O'Shea, 2005). Intracompartmental syndromes and even thrombosis of major vessels is more likely to happen in contaminated bite hence to prevent cellulitis prophylactic broad-spectrum antimicrobial treatment is given and the fang mark area of the skin was thoroughly washed with 5% potassium permanganate solution (Saravanan M *et al.*, 2017) ^[6]. However, it provides protection against the tetanus spore that might have entered animal body from contaminated snake mouth (Ananda *et al.*, 2009) ^[1]. The respiratory rate was 12/min. with labored breathing was due to flaccid paralysis of respiratory muscles resulting in dyspnea. Hence mechanical ventilation was given to the animal. Blood was normal except increased leucocytes count which is due to systemic infection as snake fangs has bacterial contaminants (Blaylock, 2001) ^[2]. Antisnake venom treatment is the only specific treatment for cobra envenomation and animal was continuously observed for three days. Animal showed complete recovery.

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