

Successful management of viper envenomation in a Rottweiler dog- A case report

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Abstract

A two-year-old female Rottweiler was presented with a history of frothy salivation, dullness, inappetence, oliguria, and edematous swelling on the face, lower jaw and neck. The clinical examination revealed fang marks on the left side of the muzzle. Based on the history, clinical signs and physical examination, the case was diagnosed as viper envenomation. The patient was successfully treated with anti-snake venom, fluid therapy, corticosteroids and antibiotics.

Key words: Anti-snake venom, Dog, Viper envenomation

Highlights

- Viper venom is hemotoxic that leads to increased vascular permeability, thrombosis and cardiopulmonary dysfunction.
- The severity depends on the location of the snake bite and the quantity of the snake venom.
- Prominent clinical signs like frothy salivation, edematous swelling of the local tissues, tachycardia, tachypnoea and prolonged clotting time were recorded.
- Successful treatment involves early detection of snake bite and administration of polyvalent anti-snake venom.
- Corticosteroids are administered to overcome the ill effects of the antivenom.

In India, there are 285 species of snakes, of which sixty species are considered poisonous and medically important. Spectacled cobra (*Naja naja*), Russel's viper (*Daboia russelii*), common krait (*Bungarus caeruleus*) and saw scaled viper (*Echis carinatus*) are responsible for the majority of life-threatening bites (Whitaker and Martin, 2014). Viper venom is hemotoxic in nature due to the presence of hemorrhagins in the venom, which leads to endothelial cell damage, increases vascular permeability, coagulation defect and extravasation of fluid into inflamed tissues resulting in thrombosis, swelling of the local tissues, oedema, cardiopulmonary dysfunction, necrosis and gangrene formation (Saravanan

et al., 2017). Garg (2018) reported that the prevalence of snake envenomation is greater in dogs and horses, and it occurs during grazing, hunting, or playing in the garden. Dogs usually get bitten on their legs or face due to their fighting or attacking nature. The present study describes the clinical signs, diagnosis, treatment and prognosis of viper envenomation in a Rottweiler dog.

A two-year-old intact female Rottweiler dog was presented to the Veterinary Clinical Complex, Small Animal Medicine Unit, Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry, with a history of frothy salivation, dullness, inappetence, oliguria, and edematous swelling of the face, lower jaw and

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neck region (Fig. 1). The owner showed the picture of the dead snake that was killed by the dog last night and case was reported on next day morning. Based on the colour and morphological pattern, the snake was identified as Russel's viper (Fig. 2) (Whitaker and Martin, 2014). The clinical examination revealed an elevated rectal temperature (103.3°F), slightly swollen popliteal lymph nodes, congested conjunctival mucous membrane, tachycardia (130 bpm), tachypnoea (120/minute) and fang marks on the muzzle's left side (Fig. 3). Blood sample was collected, subjected to Activated Clotting Time (ACT) and revealed prolonged blood clotting time (<5 minutes). Based on the history, clinical signs and clinical examination, the case was diagnosed as Russel's viper envenomation.

Snake venom is the toxic secretion of a specialized venom gland which delivered through the fangs and provokes deleterious effects (WHO, 2016). The severity of the snake venom envenomation depends on the site of the snake bite, the toxicity of the snake venom depending upon the species and the amount of venom entering into the body of the animal (Sharma, 2002). Dullness, depression, inappetence, frothy salivation, oedematous swelling of the local tissues, elevated body temperature, tachycardia, tachypnoea and prolonged clotting time were recorded. The diagnosis can be made based on the history of snake bite, and the presence of fang marks on physical examination (Hussain *et al.*, 2011) which is in agreement with the present study. The successful treatment can be achieved by the early detection of snake bite and the administration of polyvalent anti-snake venom (Sharma, 2002). On day one, the animal was treated with polyvalent anti-snake venom (Benom snake antivenom, BE Biological E. Ltd, India), 1st dose was mixed with Inj. Dextrose 5% i.v., Inj. prednisolone @ 1mg/kg b.wt. i.m.,

Inj. frusemide @ 1mg/kg b.wt. i.m. and Inj. enrofloxacin @ 2.5mg/kg b.wt. i.m. On day two, there was a slight improvement in the behaviour of the animal and reduction in the facial swelling, and the same treatment was followed for the subsequent days. On day three, the animal started taking food and water, and restored normal rectal temperature (101.4°F), slightly congested mucous membrane, heart rate 80 bpm, respiration rate 60/ minute and complete reduction of edematous swelling of the face and neck (Fig. 4). The dog was supported with Syp. Advaren 10 mL BID PO and Syp. Liv 52 10 mL BID PO for next two weeks to promote renal and hepatic function respectively. The oral cavity of the snake contains a wide variety of harmful bacteria which may enter through the site of the fang to the animals. A broad-spectrum antibiotic was administered to prevent the entry of bacterial infection at the site of fang bite (Resiere *et al.*, 2020). Corticosteroids are administered to overcome the ill effects of the antivenom. Diuretics can be used to reduce the oedema of the local tissues as a symptomatic treatment (Yogeshpriya *et al.*, 2017). The animal had an uneventful recovery.

Conflict of interest: Authors have no conflict of interest in this study.

Author's contribution: CD: Carried out the clinical examination, diagnosis, treated the cases and drafted the manuscript; ND: Supervised, analyzed the work and revised the manuscript; PV, KR, AA: Read and approved the final manuscript.

ACKNOWLEDGEMENT

Authors are thankful to the Dean, Rajiv Gandhi Institute of Veterinary Education and Research, Puducherry, India, for providing all the facilities and permission to publish this article.

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Management of viper envenomation in a Rottweiler dog

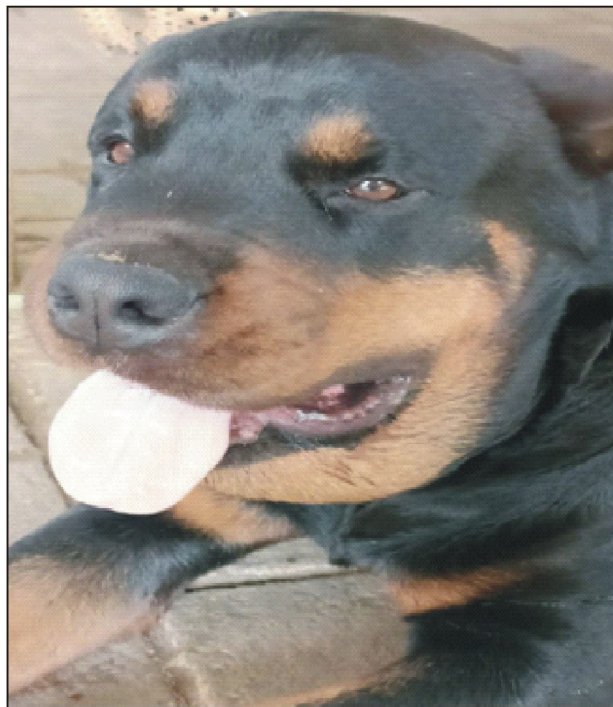


Fig. 1. Day 0- Oedematous swelling of face and neck in a Rottweiler dog with viper envenomation



Fig. 2. Day 0- Fang marks noticed on the muzzle of a Rottweiler dog with viper envenomation



Fig. 3. Russel's viper snake was noticed by the pet owner



Fig. 4. On day 3 of treatment the Rottweiler dog had complete recovery

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