The Pharma Innovation Journal 2023; SP-12(9): 647-649

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(9): 647-649

www.thepharmajournal.com
Received: 04-05-2023
Accepted: 05-06-2023

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Clinical management of snakebite in dogs: Case study

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Abstract
The study was conducted on three dogs presented in TVCC Durg, with the history of frequent salivation, edematous swelling at facial region and completed recumbent. Physiological examination revealed two fang marks on their body and there was increased body temperature, heartbeat, pulse and respiration rate. Hematological examination was performed showing reduced haemoglobin and neutrophilia, leukocytopenia. On the basis of clinical examination snake bite was confirmed. Polyvalent snake antivenom was given along with other supportive treatment. All the dogs recovered after treatment within 4 to 5 hours. In conclusion immediate treatment with polyvalent anti-snake venom is effective and prognosis is favorable.

Keywords: Haematological, neutrophilia, leukocytosis, polyvalent antisnake venom

Introduction
One of the most complicated natural poisons is snake venom, which has 50–200 proteinaceous components. (Kim *et al.,* 2011) [9] (Bolon *et al.,* 2019) [2] The various pharmacological effects seen in snakebite patients are caused both directly and indirectly by clinically significant major toxins in snake venoms, such as phospholipase A2 (PLA2), snake venom serine proteases (SVSPs), snake venom metalloproteinases (SVMPs), and three-finger peptides (3FTxs) (Debono *et al.,* 2019) [4]. Pharmacologically, the effects of snake venom can be divided into three categories: hemotoxic, neurotoxic, and cytotoxic (Park *et al*. 2007) [15]. First, hemotoxic venom exerts cardiovascular and hemostatic effects (Bolon *et al.,* 2019) [2]. A compromised hemostatic system may result in reduced blood coagulability, blood vessel damage, and thrombosis, and cardiovascular repercussions may result in significantly low blood pressure (Bolon *et al*., 2019) [2] (Palm C, 2019) [14]. Second, interference with neurotransmission caused by neurotoxic envenoming targets several sites of the neuromuscular junction and may cause neuromuscular paralysis (Bolon *et al.,* 2019) [2] (Holowaychuk *et al.,* 2014) [7] Finally, cytotoxic envenoming kills cells by altering the function of membrane-bound enzymes, preventing platelet aggregation, depolarizing neurons, and disrupting the excitable membrane of heart cells (Kumar *et al.,* 2018) [10].

Materials and Methods
History
The present study was conducted on three dogs presented with the history was edematous swelling of facial region, hyper salivation and completely recumbent from last 1 to 2 hours after playing outside in their garden. Detailed physical and clinical examination was done and hematological test was performed in all the three dogs. (Fig 1) the detailed information and description is given in the following table.

Table 1: The detailed information and description is given

S.N	No. of case	Age	Site of bite	Clinical signs
1	Case no 1	2 yr	Lower jaw	Hypersalivation, recumbancy
2	Case no 2	1.5 yr	Facial region	Swollen, cyanotic tongue and congested mucus membrane
3	Case no 3	4 yr	Head region	Swollen

Treatment

The only standardised treatment for snake envenomation at the moment is intravenous delivery of antivenom. (Lim *et al.*, 2013) [12] (Kasturiratne *et al.*, 2008) [8] (Fukuda *et al.*, 2006) [5]. Polyclonal antibody fractions or antibodies that bind to circulating snake poisons are present in antivenom. The venom-antivenom complexes that result from this interaction inhibit the venom target site or limit the ability of the circulating poison molecules to migrate. Effective therapy depends on the interval between snake envenomation and anti-venom administration. Although it is advised to deliver anti-venom within 4 hours of a snakebite for a better prognosis, anti-venom may still be effective days later if systemic envenoming is still present, especially in the event of hemostatic problems.

Fig 1: During treatment

Fig 2: Two fang marks on lower jaw

Fig 3: After treatment

Results and Discussion

Snake envenomation in dogs is an emergency which requires immediate treatment to prevent untoward consequences. Local tissue reaction, edema and necrosis of the tissue in and around the snakebite sites, nervous signs and coagulopathy are the most common symptoms of envenomation. The prompt administration of antivenom is the primary treatment for venomous snakebite. (Arochand Harrus 1999) [1]. (Kim *et al.*, 2011) [9]; (Hackett *et al.*, 2002) [6]. Although snake venom is best delivered within four hours of a bite, it is still possible to cure systemic envenoming two weeks or more later, particularly in cases of hemostatic abnormalities. (Lim *et al.*, 2013) [12], (Arochand Harrus 1999) [1], (Segev *et al.*, 2004) [16].

Conclusion

The prompt administration of antivenom is the primary treatment for venomous snakebite. (Arochand Harrus 1999) [1]. (Kim *et al.*, 2011) [9]; (Hackett *et al.*, 2002) [6]. Although snake venom is best delivered within four hours of a bite, it is still possible to cure systemic envenoming two weeks or more later, particularly in cases of hemostatic abnormalities. (Lim *et al.*, 2013) [12], (Arochand Harrus 1999) [1], (Segev *et al.*, 2004) [16] In addition, hydration therapy, pain management, antibiotic prophylaxis, respiratory support, and surgical debridement are all possible supportive treatments for canine snake envenomation (Chiba *et al*., 2018) [3].

References

1. Aroch I, Harrus S. Retrospective study of the epidemiological, clinical, haematological and biochemical findings in 109 dogs poisoned by *Montivipera xanthine* Palestine. Vet Rec. 1999;144(19):532-535.
2. Bolon I, Finat M, Herrera M, Nickerson A, Grace D, Schütte S, *et al*. Snakebite in domestic animals: First global scoping review. Prev Vet Med. 2019;170:104729.
3. Chiba T, Koga H, Kimura N, Murata M, Jinnai S, Suenaga A, *et al*. Clinical condition and management of 114 mamushi (*Gloydius blomhoffii*) bites in a general hospital in Japan. Intern Med. 2018;57(8):1075-1080.
4. Debono J, Bos MH, Do MS, Fry BG. Clinical implications of coagulotoxic variations in Mamushi (Viperidae: Gloydius) snake venoms. Comp Biochem Physiol C Toxicol Pharmacol. 2019;225:108567.
5. Fukuda T, Iwaki M, Hong SH, Oh HJ, Wei Z, Morokuma K, *et al*. Standardization of regional reference for mamushi (*Gloydius blomhoffii*) antivenom in Japan, Korea, and China. Jpn J Infect Dis. 2006;59(1):20-24.
6. Hackett TB, Wingfield WE, Mazzaferro EM, Benedetti JS. Clinical findings associated with prairie rattlesnake bites in dogs: 100 cases (1989-1998). J Am Vet Med Assoc. 2002;220(11):1675-1680.
7. Holowaychuk MK, Hanel RM, Darren Wood R, Rogers L, O'Keefe K, Monteith G, *et al*. Prospective multicenter evaluation of coagulation abnormalities in dogs following severe acute trauma. J Vet Emerg. Crit. Care. 2014;24(1):93-104.
8. Kasturiratne A, Wickremasinghe AR, de Silva N, Gunawardena NK, Pathmeswaran A, Premaratna R, *et al*. The global burden of snakebite: A literature analysis and modelling based on regional estimates of envenoming and deaths. PLoS Med. 2008;5(11):e218.
9. Kim JB, Min MS, Park DS, Song JY. Red Data Book of Endangered Amphibians and Reptiles in Korea. Incheon:

National Institute of Biological Resources; c2011. p. 85.
10. Kumar KS, Narayanan S, Udayabhaskaran V, Thulaseedharan NK. Clinical and epidemiologic profile and predictors of outcome of poisonous snake bites - an analysis of 1,500 cases from a tertiary care center in Malabar, North Kerala, India. Int. J Gen Med. 2018;11:209-216.
11. Kim E, Choe C, Yoo JG, Oh SI, Jung Y, Cho A, *et al*. Major medical causes by breed and life stage for dogs presented at veterinary clinics in the Republic of Korea: a survey of electronic medical records. Peer J. 2018;6:e5161.
12. Lim H, Kang HG, Kim KH. Antivenom for snake bite in Korea. J Korean Med Assoc. 2013;56(12):1091-1103.
13. Lynch A. Non-regenerative anemia. In: Drobatz KJ, Hopper K, Rozanski E, Silverstein D. Textbook of Small Animal Emergency Medicine. Hoboken: Wiley; c2019. p. 413-418.
14. Palm C. Acute azotemia. In: Drobatz KJ, Hopper K, Rozanski E, Silverstein D. Textbook of Small Animal Emergency Medicine. Hoboken: Wiley; c2019. p. 593-600.
15. Park J, Lee J, Jee H, Park S, Kim M, Jeong S. Treatment of snakebite wound in a dog. J Vet Clin. 2007;24(3):449-452.
16. Segev G, Shipov A, Klement E, Harrus S, Kass P, Aroch I. Viperapalaestinae envenomation in 327 dogs: A retrospective cohort study and analysis of risk factors for mortality. Toxicon. 2004;43(6):691-699.