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SNAKE BITE AND ITS SUCCESSFUL TREATMENT IN DOG: A CASE REPORT

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ABSTRACT

A 24 months old female Alsatian dog weighing 21 kg was presented to the Veterinary Teaching Hospital, Michael Okpara University of Agriculture, Umudike with the history of frothy salivation, dullness, depression, abnormal gait and recumbence. Physical examination of the dog revealed cold extremities, reduced reflexes and swollen cyanotic areas with fang marks on the left cheek. The case was diagnosed as that of envenomation due to snake bite. The case was treated by the administration of polyvalent snake venom antiserum, 5% dextrose saline, dexamethasone, and antibiotics. The earlier clinical signs were reversed with the animal fully recovered and returned to normal activity within one week of the treatment..

***Keywords*:** Alsatian dog, snake bite, polyvalent, snake venom, antiserum

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INTRODUCTION

Snake bite is a common medical emergency [1] with significant morbidity and mortality in small animal practice in Africa. It is one of the most neglected public health issues in poor rural communities living in the tropics. Nigeria is one of the affected regions, due to its high population density, widespread agricultural activities, numerous venomous snake species and lack of functional snake bite control programs [2]. 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 [3]. Poisoning from snake venom in animals is an emergency which requires immediate attention since delayed or inadequate treatment may lead to fatalities. Poorly informed rural populations often apply inappropriate first-aid measures while vital time is lost before the victim is transported to a treatment centre where cost of treatment can constitute an additional hurdle. Out of the many species of snakes in the sub region, only a handful is poisonous enough to cause death [4]. This paper describes a case of snake bite in a dog and its successful management.

CASE HISTORY

A female Alsatian dog aged about two years with a history of frothy salivation, dullness, depression, abnormal gait and recumbent position was brought to Veterinary Teaching Hospital, Michael Okpara

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University of Agriculture, Umudike for treatment. The owner reported that he left in the morning without checking on the dog, and on returning later in the day, he saw the animal very weak with bite marks on the left cheek. The dog was normally left in the fenced compound which has a garden in it. There was no previous history of the presence or bite of a snake in the area.

CLINICAL EXAMINATION OF THE DOG

Clinical parameters like rectal temperature, pulse and respiratory rates were respectively 40.8.^{o}C, 78 pulsations and 12 breaths per minute. The animal weighed 21 kg. Physical examination of the case revealed presence of cold extremities, reduced reflexes and swollen cyanotic areas with fang marks on the left cheek.

DIAGNOSIS

Based on the history and clinical observations, a tentative diagnosis of envenomation due to snake bite was made.

TREATMENT

The dog was treated with polyvalent snake venom antiserum (10 ml liquid/lyophilized, Polyvalent, Enzyme Refined Equine Immunoglobulins, VINS Bioproducts Limited Survey, India). The clear supernatant obtained after dilution was slowly administered intravenously in a shot of 1 ml at an interval of 3 - 4 minutes up to a maximum of 10 ml. In addition, 500 ml of 5% dextrose saline was administered intravenously to the dog. Dexamethasone (Soft Land Pharma Hebei Huarun Pharmacy Co. Ltd., China) was administered at the rate of 1 mg/kg; Atropine sulphate at the rate of 0.04 mg/kg; Piroxican at the dose of 20 mg/2 ml and a combination of penicillin and streptomycin (Penstrep 20/25 INJ Fabrique Par: Kepro B.V – Maagdenburgstraat, Deventer, Holland) at 1 ml/25 kg. All the additional treatments were given intramuscularly. Thereafter, the dog was kept under close observation. The next day, the dog was much better, ate well, was active and there was no relapse of the earlier clinical signs. The antibiotic therapy was continued for 5 days as prescribed. After one week of treatment, the dog was discharged in very good health.

DISCUSSION

Snake venom is highly modified saliva containing zootoxins that facilitate the immobilization and digestion of prey, and defense against a threat [5,6]. It is injected by unique set of fangs after a bite but some snake species are also able to spit [7]. Venom contain more than 20 different compounds, mostly proteins and polypeptides [8] which are complex mixtures of proteins, enzymes, and various other substances with toxic and lethal properties [7]. It also contains inorganic cations such as sodium, calcium, potassium, magnesium, and small amounts of zinc, iron, cobalt, manganese, and nickel [9]. The other components of snake venoms are glycoproteins, lipids, and biogenic amines, such as histamine, serotonin and neurotransmitters (catecholamines and acetylcholine) [5]. Most of the proteins in snake venoms have very specific effects on various biological functions including blood coagulation, blood pressure regulation, and transmission of the nervous or muscular impulses and have been developed for use as pharmacological or diagnostic tools or even useful drugs [7].

Some of the Clinical signs such as frothy salivation, dullness, muscular weakness and abnormal gait observed in the present case may be attributed to the enzymatic and non enzymatic compounds in the snake venom. According to Klaassen [5], hyaluronidase cleaves internal glycoside bonds in certain acid mucopolysaccharides resulting in decreased viscosity of connective tissues allowing other fractions of the venom to penetrate the tissues.

The clinical symptoms of frothy salivation, dullness were in line with the reports of Shearer [10]. An uneventful recovery was recorded following the antiserum and the other supporting treatments used to manage this case. Broad spectrum antibiotics, and polyvalent snake venom antiserum have earlier been

used in successfully treatment of snake bites in dogs, cats and other animals [11,12,13]. The toxicity of snake venom is attributed mainly to the contained proteolytic enzymes such as phosphatidase, cholinesterase and neurotoxin. The clinical manifestations show a great deal of variation, depending upon the chemical composition of venom, type of animal affected, site of bite and amount of venom injected. The fangs of a snake are invariably loaded with various types of bacteria which subsequently contaminate the bite wound and thus warrant the inclusion of antibiotics in the treatment of bitten animals. Antivenom may sometimes cause anaphylactic reactions as they are derived from hyper immunized horse serum with concentrated and purified immunoglobulins that may lead to immediate or delayed immune hypersensitivity reactions in certain cases [11,14].

Dexamethasone injection was given to the dog in order to overcome such anaphylactic reactions that are sometimes associated with the administration of lyophilized polyvalent anti-snake venom [9]. The corticosteroid (dexamethasone) was preferred to antihistamines in the management of the present case as the later have been shown in certain occasions to potentiate the toxic action of snake venom [5,15]. The broad spectrum antibiotic therapy was administered as a prophylactic cover against secondary bacterial contamination of the bite wound.

REFERENCES

1. Lobetti, R. G. and Joubert, K. E. (2004). A retrospective look at snake envenomation in 155 Dogs from the Ondersteepoort area, South Africa. *Journal of South Africa Veterinary Association*, 75 (4): 169 – 172.
2. Habib, A. G. (2013). Public health aspects of snakebite care in West Africa: perspectives from Nigeria. *Habib Jounal of Venomous Animals and Toxins including Tropical Diseases*, 19 (1): 27. PMID: 24134780. Doi 10:1186/1678-9199-19-37.
3. Garg, S. K. (2002). Zootoxins. In: *Veterinary Toxicology*. 1st Edn., CBS Publishers and Distributers, New Delhi.
4. Branch, B. (1998). *Field guide to snakes and other reptiles of southern Africa*. 3rd Edn., Struik Publishers, Cape Town, South Africa. *Herpetological Reviews*, 26 (4): 212 – 214.
5. Klaassen, C. D. (2008): Properties and Toxicities of animal venoms. In: *Toxicology*. 7th Edn., McGraw-Hill, New Delhi. Pp. 1093 - 1098.
6. Mattison, C. (2007). *The New Encyclopaedia of Snakes*. University Press, New Jersey.
7. Bauchot, R. (1994). *Snakes: A Natural History*. Sterling Publishing CO., Inc., New York City, NY USA. Pp. 194 - 209. ISBN 1-4027-3181-7.
8. Tim, H. and Kralg, A. (2002). *Firefly Encyclopedia of Reptiles and Amphibians*. Firefly Books Ltd., Toronto, Canada. Pp.202 - 203. ISBN 1-55297-613-0.
9. Vivek, K.V., Keyur, B., Hardik, B. and Utsav, P. (2013). Therapeutic potential of snake venom in cancer therapy: current perspectives. *Asian Pacific Journal of Tropical Biomedicine*, 3(2): 156 - 162.
10. Shearer, T. S. (1998). *Emergency first aid for your dog*. Timber Raltlers vs dogs. Pp. 1 - 3.
11. Jain, N. C. (1986). *Schalm's Veterinary Haematology*. IVth Edn., Lea and Febiger, Philadelphia.
12. Bailey, E. M. and Garland, T. (1992). Toxicological emergencies. In: *Veterinary Emergency and Critical Care*. Murtaugh, R. J. and Kalpana, P. M. Eds., St. Louis, Mosby yearbook, 1992.
13. Nicholsan, S. S. (1995). Toxicology. In: *Textbook of Veterinary Internal Medicine, Diseases of Dogs and Cats*. Ettinger, S. J. and Feldman, E. C. Eds., Vol. 1., IVth Edn., WB Sounders, Co., Phildephia.
14. Sai, B. R. M., Satish, K. and Thirumala Rao, D. S. (2008). To overcome the untoward effect to snake venom. *Intas Polivet*, 9 (1): 116.
15. Singh, B. (1980). Snakes, snakebite symptoms and diagnosis and treatment. *Livestock Advisor*, 5: 55 – 60.