

A CASE OF *VIPERA AMMODYTES* BITE IN A COMPANION DOG

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Abstract

On April 1, 2024, outside a family house in a village in the foothills of Rudnik Mountain, a female shar pei companion dog was bitten by a nose-horned viper, *Vipera ammodytes*. The dog was taken to a veterinarian and received symptomatic therapy but not antivenom. The first night the dog's state was very bad. For the following two days, she was lethargic and refused food and water. The oedema, which developed on her snout and spread to the abdomen, persisted for 3-4 days. After six days, the dog had fully recovered. In Serbian veterinary journals, reports describing the effects of snake bites on dogs are lacking; even in foreign scientific literature, there are few data regarding *V. ammodytes* bites in companion animals. Therefore, the present report could be useful for veterinarians and dog owners.

Key Words: companion dog, nose-horned viper, snakebite envenomation

CASE PRESENTATION

At about 09.30 h on April 1, 2024, a 4-5-year-old adopted, female companion dog (shar pei) was bitten by an adult male nose-horned viper, *Vipera ammodytes*, in the village of Majdan, in the foothills of Rudnik Mountain. The snake had emerged from the stone staircase at the front of the house. The previous day, the dog's owner's family had observed that the dog was digging at the base of the wall and barking at a hole in the staircase base, but the family had not paid much attention to that behaviour. When

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the bite occurred, the dog was tied up on the house porch, and the family observed that “the snake was jumping at the dog and the dog was jumping at the snake”. It is supposed the snake ventured out of its hideout and slithered toward the dog; the dog could have tried to sniff it, so the snake felt threatened and bit the dog in self-defence.

The dog received a bite to the nose. Her snout started swelling immediately; in 1 hour the muzzle was fully swollen (Fig. 1). Approximately 1 hour after the bite, the dog was taken to a veterinary clinic in Gornji Milanovac, where the bite wound was disinfected with H_2O_2 . The veterinarian could not provide antivenom but gave the dog a corticosteroid injection (2 mL of dexamethasone Dexa-Kel 02 2mg/mL, Kela Laboratoria N.V., Belgium), 10 mL s/l of calcium borogluconicum 200 mg/mL (Veterinarski Zavod Subotica, Serbia), 1 vial i.m. of antihistamine Synopen 20 mg/mL (Merckle GMBH, Germany), and 3 mL i.m. of Vitamin C (100 mg/mL, Veterinarski Zavod Subotica, Serbia). Topical gentamicin antibiotic was prescribed for several days. No laboratory tests were performed.



Figure 1: The dog on the day she was bitten by a *Vipera ammodytes* (Photographed by MĆ)

The first night the dog was delirious, completely disoriented, unresponsive to her owners' calls, and groaning in pain; she could not lie down. The oedema spread from the dog's nose first to her throat, later to the chest and finally to the abdomen. After the first night, the dog felt better and could sleep. Nevertheless, she refused food and water for two days. Approximately 72 hours after the bite, the oedema started to recede. On the sixth day after the bite, the swelling had receded fully and the dog's

behaviour was almost normal. At that time, only two whitish bite marks remained visible on the dog's nose (Fig. 2).



Figure 2. The dog's nose six days after the *Vipera ammodytes* bite (Photographed by SN)

DISCUSSION

Due to timely and appropriate veterinary treatment, the dog described here survived and recovered. On the day she was taken to the veterinarian, another dog (anamnesis is unavailable) died due to a viper bite after it presented at the same clinic.

Venomous snakes are elusive, skilful hunters, highly valuable in ecosystems (Velev et al., 2015), even from an anthropocentric standpoint. They are protected in many parts of the world. This is because, in addition to restrictions imposed by their biology (distributional limitations, slow growth, low fecundity), they are threatened with habitat destruction, fragmentation and loss, capture for venom extraction, direct persecution/killing, and illegal collecting for trade (Maritz et al., 2016; Ajtić, 2008). Snake venoms evolved as hunting and digestion aids (Casewell et al., 2013). Contrary to a deeply rooted belief, snakes do not attack humans or large animals; rather, their hunting targets are small creatures they can swallow. All other animals are perceived as potential threats/predators and risk being bitten when venomous snakes feel threatened (Pucca et al., 2020). Dogs usually do not try to attack snakes. One author opined: "These bites occur not because of aggressive behaviour by the dogs towards adders, but more due to curiosity" (Madsen et al., 2020).

In Serbia, there are only three species of venomous snake (Tomović et al., 2019). The largest and potentially the most dangerous (Di Nicola et al., 2021), the nose-horned viper (*Vipera ammodytes*), has been previously formally recorded on Rudnik, but only in three localities, the closest of which to the site of the present study dog-bite is at 880 m above sea level (ASL) on a path to the peak of Mali Šturac (Tomović et al., 2019). The household where the bite occurred (560 m ASL) is the last in the village (more than 350 m away from the previous house) and is surrounded by a mostly undisturbed natural environment, a mosaic of forests and meadows. The preceding year, a viper bit a young goat from the same household, and another snake was spotted near the house a few days after the case described here. The author of the present report has observed vipers in several more locations on the mountain, and local people find these snakes in piles of firewood and other suitable places, often near houses.

The circumstances and symptoms that developed in the bitten dog in the present case correspond to those previously reported from other *Vipera* sp. bites. Dogs more often are bitten in the head and neck than on the limbs, and the usual clinical signs are local swelling, dehydration, breathing and heart function disorders, blood biochemistry abnormalities, increased coagulability, mental depression, lethargy, lameness, etc. (Sutton et al., 2011; Lervik et al., 2010; Segev et al., 2004; Campbell, 2000). Hypercoagulability was detected up to 15 days following a bite (Harjén et al., 2022).

The study dog was young and healthy, weighing 20 kg. This probably contributed to her fast recovery, as low body weight was recognized as one of the most important risk factors for mortality from snake bite in dogs, while young age was associated with a higher survival rate (Segev et al., 2004). In general, dog deaths due to snake bite are rare, and some can be attributed to difficulties in obtaining the appropriate antivenom (Sutton et al., 2011; Segev et al., 2004; Campbell, 2000).

Every year, numerous dogs get bitten by snakes – in some areas, more dogs are bitten than people (Harjén et al., 2022). As is the case in human medicine, there is no centralized reporting/poison control system for veterinary medicine in Europe, and hence, the incidence of snake bite in domestic animals is often unknown. Moreover, only a limited number of publications exist in the scientific literature, despite numerous anecdotal reports to veterinarians (Nagy et al., 2024). Importantly, substantially more data are available regarding dog bites from *Vipera berus*, *Vipera aspis*, *Vipera palestinae*, and other snake species (Harjén et al., 2022; Lervik et al., 2010; Segev et al., 2004) compared to *V. ammodytes*, the most widely distributed viper in Serbia. Therefore, it is suggested by the author that veterinary practitioners in Serbia collect, analyze, and publicize their experiences with domestic animals treated for snake bites. Only with continuous education of all interested parties can snake bites be treated appropriately (Nagy et al., 2024), while increased awareness of the presence of these venomous snakes could mean many bites would be avoided/prevented.

Ethical Statement

The owners of the animal provided informed written consent for the use of data related to their pet for the purpose of publishing professional and scientific papers.

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Competing interests

The author declares that she has no competing interests.

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REFERENCES

- Ajtić, R. 2008. Nose-horned viper (*Vipera ammodytes*) conservation problems in Serbia. *Protection of Nature* 60: 1-2.
- Campbell, A. 2000. *Vipera berus* / European adder. In *Handbook of poisoning in dogs and cats* (1st ed.). A. Campbell, M. Chapman, Blackwell Science Ltd, Oxford, p. 254.
- Casewell N., Wüster W., Vonk F. J., Harrison R. A., Fry B. G. 2013. Complex cocktails: the evolutionary novelty of venoms. *Trends in Ecology and Evolution*, 28(4):219-229. <https://doi.org/10.1016/j.j.tree.2012.10.020>.
- Di Nicola, M. R., Pontara, A., Kass, G. E. N., Kramer, N. I., Avella, I., Pampena, R., Mercuri, S. R., Dorne, J. L. C. M., Paolino, G. 2021. Vipers of major clinical relevance in Europe: taxonomy, venom composition, toxicology and clinical management of human bites. *Toxicology* 453: 152724. <https://doi.org/10.1016/j.j.tox.2021.152724>.
- Harjén H. J., Hellum M., Rørtveit R., Oscarson M., Anfinson K. P., Moldal E. R., Solbak, S., Kanse, S. M., Henriksson, C. E. 2022. Persistent hypercoagulability in dogs envenomated by the European adder (*Vipera berus berus*). *PLoS ONE*, 17(2):e0263238. <https://doi.org/10.1371/journal.pone.0263238>.
- Lervik J. B., Lilliehöök I., Frendin J. H. M. 2010. Clinical and biochemical changes in 53 Swedish dogs bitten by the European adder – *Vipera berus*. *Acta Veterinaria Scandinavica*, 52:26. <https://doi.org/10.1186/1751-0147-52-26>.
- Madsen T., Luiselli L., Janssen P. 2020. Dog attacks on adders; a comment on Worthington-Hill & Gill (2019). *Animal Conservation*, 23(2):119-120. <https://doi.org/10.1111/acv.12535>.

- Maritz, B., Penner, J., Martins, M., Crnobrnja-Isailović, J., Spear, S., Alencar, L. R. V., Jesús Sigala-Rodriguez, Kevin Messenger, Rulon W. Clark, Pritpal Soorae, Luca Luiselli, Chris Jenkins, Harry W. Greene, 2016. Identifying global priorities for the conservation of vipers. *Biological Conservation*, 204(A):94-102. <https://doi.org/10.1016/j.biocon.2016.05.004>.
- Nagy A.-L., Ardelean S., Chapuis R. J. J., Bouillon J.; Pivariu D.; De Felice B., Mertazzo, M., Fossati, P., Spicer, L. J., Dreanca, A. I., Caloni, F. 2024. Zootoxins and domestic animals: A European view. *Toxins*, 16:48. <https://doi.org/10.3390/toxins16010048>.
- Pucca M. B., Knudsen, C., Oliveira I. S., Rimbault C., Cerni F. A., Wen F. H. et al. 2020. Current knowledge on snake dry bites. *Toxins*, 12:668; doi:10.3390/toxins12110668.
- Tomović L., Andelković M., Krizmanić I., Ajtić R., Urošević A., Labus N., Simović, A., Maričić, M., Golubović, A., Ćorović, J., Paunović, A., Jović, D., Krstić, M., Lakušić, M., Džukić, G. 2019. Distribution of three *Vipera* species in the Republic of Serbia. *Bulletin of the Natural History Museum*, 12:217-242. <http://dx.doi.org/10.5937/bnhmb1912217T>.
- Segev, G., Shipov, A., Klement, E., Harrus, S., Kass, P., Aroch, I. 2004. *Vipera palestinae* envenomation in 327 dogs: a retrospective cohort study and analysis of risk factors for mortality. *Toxicon* 43:691-699. doi:10.1016/j.toxicon.2004.03.001.
- Sutton N. M., Bates N., Campbell A. 2011. Canine adder bites in the UK: a retrospective study of cases reported to the Veterinary Poisons Information Service. *Veterinary Record* 169:607. <http://dx.doi.org/10.1136/vr.d4695>.
- Velev R., Tankoski T., Tankoska M. 2015. Fatal snake bite in a brown bear (*Ursus arctos* L.): a case report. *Macedonian Veterinary Review* 38(1):113-117. <http://dx.doi.org/10.14432/j.macvetrev.2014.12.034>.

SLUČAJ ZMIJSKOG UJEDA VLASNIČKOG PSA

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Kratak sadržaj

Prvog aprila 2024. godine, ispred porodične kuće u selu, u podnožju planine Rudnik, ženku psa je ujeo poskok, *Vipera ammodytes*. Kuja je odvedena veterinaru i dobila je simptomatsku terapiju, ali ne i protivotrov. Prve noći stanje psa je bilo veoma loše. Tokom naredna dva dana bila je letargična i odbijala hranu i vodu. Otok, koji se pojavio na njušci i kasnije spustio do abdomena trajao je 3–4 dana. Nakon šest dana pas se potpuno oporavio. U nacionalnim veterinarskim časopisima nisam uspjela da nađem nijedan rad koji bi opisivao efekte ujeda otrovnice psa; čak i u inostranoj literaturi jedva da ima podataka vezanih za ujede poskoka. U tom smislu, ovaj prikaz slučaja može biti od koristi i veterinarima i vlasnicima pasa.

Ključne reči: vlasnički pas, poskok, trovanje usled ujeda otrovnice