
VENOMOUS OR NOT: SOME FURTHER DATA.

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INTRODUCTION

With respect to the misunderstanding held by many people "that all snakes are venomous", the real snake lover, of course, has a hearty laugh when the opportunity presents itself; and this happens frequently. The herpetologist explains patiently that only certain snakes are venomous: particularly the Elapid snakes (like the cobra) and Vipers (like pit vipers and adders). All other snakes are not dangerous to people.

Unfortunately the affair is somewhat more complicated, a fact that the people who read *Litteratura Serpentina* year by year already know.

Firstly not all "real" venomous snakes are dangerous to people. Some are very small, have very small venom fangs or a venom ineffectual against humans.

Secondly, there are snakes which don't belong to the Elapids or Viperids, but which do have venom glands and kill their prey with the aid of this venom. Here we are dealing with the so-called opisthognath snakes: they have extended teeth with small grooves. By holding and chewing these snakes envenomate their prey.

Next to opisthognath snakes there are also so-called non-venomous snakes which, it is

true, have no venom fangs at all but which do secrete saliva that, under certain circumstances can be highly toxic, even to humans.

This is associated with a particular salivary gland, called Duvernoy's gland. Not all snakes possess this gland: *Elaphe*-, *Lampropeltis*-, and *Pituophis*- species for example do not possess it and thus do not secrete venomous saliva. Many other species however do, for example *Thamnophis*-, *Natrix*-, *Coluber*-, *Opheodrys*-, *Nerodia*- and *Storeia*-species, to mention a few well known genera.

Sleijpen (1984) presents copious data, including a complete list, derived from cited literature. Some of these snakes (such as *Rhabdophis*-species) do have, at the point where the opisthognath snakes have extended, grooved teeth, extended teeth, but they are not grooved. Anyone who has been bitten by such an Asiatic grass snake has probably felt those teeth.

EXAMPLES

The article of Sleijpen in *Litteratura Serpentium* (1984) gives data about symptoms after a bite by *Coluber constrictor* and a report of literature research about miscellaneous other snakes, including *Thamnophis couchi* (a garter snake). Thus it covers some snakes that are generally considered harmless because they are not truly venomous. *Rhabdophis tigrinus* (*Natrix tigrina*) and *Rhabdophis subminiatus* for example are often put on the market as excellent snakes for beginners. One of the snakes mentioned by Sleijpen is *Spalerosophis diadema*, the diadem snake.

An acquaintance of mine, Jan Semmeling, some time ago kept another species of the same genus, *Spalerosophis arenarius*, and concluded that they killed their prey the same way as opisthognath snakes: by biting the mouse in the neck, holding it fast and firmly chewing on it. There is no form of constriction. The entwining is only done to keep the snake steady; the prey dies from the influence of the saliva. Sleijpen found (in literature) that mice which were bitten by *Spalerosophis diadema* died within 24 hours.

CONCLUSION

Thus it is not correct to simply classify snakes as venomous or non-venomous or to conclude that all non-venomous snakes are completely harmless under all circumstances. For many species of snakes it is prudent to be cautious with respect to their bite, even if you have never had any reaction after a bite up to now.

PROBLEMS

There is, however, another problem. It is not correct, in all cases in which someone shows "symptoms" after being bitten by a snake, to assume that the snake is necessarily venomous. When you suck up the saliva of a cat in a hypodermic syringe and inject a small amount of this subcutaneously into yourself, then there is every chance that a fierce reaction may ensue. This is caused by proteins alien to your body and these are repelled by your own cells. It depends on all kinds of factors, as to how strongly a person reacts. Someone

who appears to be allergic to the introduced substance, will suffer a lot from it. Also the site where the substance is injected will be of importance.

Another example, this time taken from life. About two years ago I was bitten by a mouse on a finger, in the vicinity of a knuckle. Almost immediately the finger became swollen, the skin tightened and fierce pain followed. Bending the finger was impossible. There was discolouration at the site of the wound (red colouration, later blue colouration). These symptoms lasted a long time: after about two weeks I still could only move the finger with difficulty and when there was pressure on it, it was still painful.

Half a year later something similar happened again, this time in another finger. This bite was from a rat. The symptoms were the same, only the swelling occurred even faster.

Are rats, mice and cats therefore venomous? Should there be warnings about them? Should people apply for a license when they want to keep white mice or Angora cats? This seems to me fairly exaggerated. Of course it is best to avoid being bitten by these animals, but this is already understood by everyone.

The point I want to make is the following: some people have had "poisoning symptoms" after being bitten by a snake that is known to be non-venomous, but this does not always have to mean that the snake in question is "venomous". There have been reports of "normal" and extreme reactions to bites from the same snake species by different people.

Nevertheless it is of interest to snake-keepers, and not without (self)-interest, to take notice of these cases where there



Foto 1: *Spalerosophis arenarius*,
foto T. Steehouder.



Foto 2: *Rhabdophis subminiatus*,
foto T. Steehouder.

seem to be several accounts of toxic reactions to bites from "non-venomous" species. That is why I give a resumé in the following two sections, of two articles reporting such cases.

ARTICLE 1 (MINTON & MEBS, 1978)

In an article in *Salamandra* (April, 1978) Sherman Minton and Dietrich Mebs cite four cases in which a person that was bitten by a colubrid snake showed envenomation symptoms. All cases occurred in the U.S.A.

Coniophanes frangivirgatus

One of the authors, Sherman Minton, caught in 1976 a specimen of this opisthoglyph snake of 40 cm length. The animal bit him on the fore-finger, immediately after which a stinging pain appeared, and also red discolouration around the bite location. The symptoms disappeared within an hour.

Leptophis ahaetulla

This case took place in 1957. The victim was bitten on the hand by a Costa Rican specimen of about 1 m. There appeared fierce pain and also swelling around the wound. The symptoms lasted some hours. Later the victim developed an over sensitivity to the saliva of colubrid snakes. This, for example, became obvious after a bite from a, normally harmless, ratsnake (*Elaphe obsoleta*): producing painful blisters and red discolouration. This over-sensitivity was not present before the bite from the *Leptophis ahaetulla*.

Cyclagras gigas

In 1969 a snake keeper was bitten on the hand, after which local pain and swelling of the hand appeared, and also mild dizziness and nausea. After some hours the symptoms disappeared. The bite of this snake (according to several authors) is considered venomous by snake keepers in the U.S.A.

Rhabdophis tigrinus

Serious effects following bites from this aglyphous snake (which thus lacks venom fangs of any type) have repeatedly been reported. The case described here is less serious.

In 1969 a snake keeper in California was bitten on the first knuckle bone of his left fore-finger. The bite occurred during the evening. After some minutes the finger became numb and started to swell. Lymphatic fluid oozed out of the little wounds. The hand became hyper sensitive. The ears began to buzz and a headache ensued. Within ten minutes these symptoms grew worse. Antibiotic treatment was administered in hospital. Half an hour after the bite the headache disappeared, but bleeding of the gums occurred. The patient became nauseous. The next morning the gums were still bleeding and the whole hand was swollen. When the patient cut himself whilst shaving it appeared that his blood would not coagulate. Besides this the patient felt dazed. His urine appeared to be reddish. These symptoms lasted the whole day. By the morning of the third day his gums had ceased to bleed. The urine was deep-red. By late in the evening of the third day all symptoms had disappeared. These symptoms are a less

acute version of more serious cases described in literature.

ARTICLE 2 *COLUBER RAVERGIERI* (ISHUNIN, 1950)

First case.

The first description of the effects of a bite from this snake dates from 1950. It took place in Central Asia. A female specimen of slightly over 1 m bit the author, Ishunin, on the right hand, and kept chewing for three to four minutes. Afterwards blood dripped from two small wounds. The victim cleaned the wound with his own saliva.

Within a few minutes a prickling pain occurred round the wound, which then started to swell, while the pain in the hand grew worse. After two hours the whole hand started to swell and after three to four hours the bite area was discoloured bluish. The body temperature stayed normal. The pain grew worse, as did the swelling.

After eight hours the whole hand was swollen and blue; it itched and was painful. After twenty hours the patient could not move his hand. Only after thirty hours did the swelling start to decrease. When he moved his hand, one could hear a clicking sound, as sometimes occurs with rheumatic disorders. The discolouring remained. After three days the swelling had disappeared, but the area remained discoloured and painful. This continued during the fourth day while the wound itched and the hand cramped when the patient moved it. Even after eight days the envenomation symptoms continued. It was not until the tenth day that all symptoms disappeared. It was then

discovered that the tips of the teeth had broken off and were still lodged in the hand.

Second case.

A second case was described in 1969. The symptoms were similar to those in the first case. A large male bit a person on the left hand and caused a deep, bleeding wound. After ten to fifteen minutes the area around the bite started to swell, followed rapidly by swelling of the whole hand and arm. When the victim turned his hand, this caused a headache. Later he felt pain in the lymph glands and under the left arm. Only at the end of the third day had the symptoms disappeared

According to the observer the envenomation symptoms after a bite by *Coluber ravergeri* are no less serious than those following a bite by *Vipera ursinii*.

Third case.

Georg Mamonov, the author of the article on which this chapter is based, was also bitten; this time by an animal of about 80 cm in length which he kept in captivity. At first the wound bled, but he had only mild pain. After twenty to thirty minutes this also stopped.

Some weeks later this author was bitten again, by another specimen of more than 1 m in length. In this case there were no symptoms.

For the third time Mamonov was bitten, this time in the fore-finger and the middle finger of the left hand. There were clear envenomation symptoms, which he describes in detail:

Following the bite, during the morning hours, he had a prickling pain and the area around the wound was sensitive. The bitten fingers were rinsed under running water; this decreased the pain. The fingers swelled, the hand became numb and could only be moved with difficulty. The skin of the bitten hand itched. The skin became cooler and he experienced a stinging pain. The blood that came out of the little wounds did not coagulate. These symptoms grew worse in the following hours. Attempts to move the hand produced nothing but pain. Blue discolouration appeared. The blood dried up red, yellow, dark-red and black. At the end of the day the hand was purple-red with spots. Only mild pain was felt in the hand.

The next day the patient only felt mild pain in the hand and in the shoulder when pressure was applied. the fingers became hard and numb. The hand was still swollen. The symptoms died out during the following days.

CONCLUSIONS

As is evident from the descriptions from Mamonov it is possible that the reaction of the same person to the saliva of *Coluber ravergeri* can be very different, depending upon the seriousness of the bite (measured as the duration of it), the size of the animal and of course his own condition, including the degree of (over)-sensitivity. In all cases medical attention was not sought. The described effects were all the result of bites from middle-asiatic animals. possibly these effects are different from those specimens from other geographic regions.

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