TAIL VENIPUNCTURE AND CARDIOCENTESIS TECHNIQUES FOR BLOOD SAMPLE COLLECTION IN HORNED VIPER (*VIPERA AMMODYTES*)

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Summary

The ability to collect quality blood samples is essential in any animal class. The production of poor-quality blood data can be useless or, even worse, misleading to the clinician (Mader D., 1996). The two common sites for venipuncture in snakes are the caudal (ventral tail) vein and the heart. Venipuncture in reptiles is generally a blind technique. In this study we compare the usefulness of two blood sampling techniques in captive horned viper (*Vipera ammodytes*) (n=18): tail venipuncture and cardiocentesis. We noted total time (in seconds) of blood collection and the number of attempts needed.

Key words: tail venipuncture, cardiocentesis, *Vipera ammodytes*

*Vipera ammodytes* is a venomous viper species found in southern Europe throughout the Balkans and parts of the Middle East. It is reputed to be the most dangerous of the European vipers due to its large size, long fangs (up to 13 mm) and high venom toxicity (3). In reptiles, common sites for obtaining blood sampling are the jugular, subcarapacial, brachial or central tail veins in chelonia, postoccipital venous sinus and fin vessels in sea turtles, palatine or coccygeal ventral veins, and heart mainly in snakes or coccygeal ventral veins in lizards (1). Other techniques such as toe- and nail-clipping or orbital sinus bleeding are rarely used nowadays (1). According to Mader D. (2006) in venomous snakes the preferred technique for blood collection is the caudal tail vein venipuncture and cardiocentesis.

Materials and methods

The animals were divided in two groups. In snakes belonging to Group 1 (n=9) we tried the caudal tail vein venipuncture and in vipers reside to Group 2 the cardiocentesis.

All horned vipers used in the experiments exhibited a healthy appearance (i.e., had no major injuries, no symptoms of diseases or dehydration) at the
beginning of the study. The snakes were weighed and the sex was determined by inspecting the hemipenis and the length of the tail. Age was classified as juvenile (or yearling, born in a previous calendar year) or adult. Prior to blood collection, for security reasons we have collected the venom.

The puncture site was disinfected with povidone iodine (Betadine). For collection we used insulin syringe with 26G ½” needle (EuroMed©). In vipers belonging to Group 1 the caudal (tail) vein was accessed caudal to the cloaca, between 25% and 50% down the tail. We try to avoid the hemipenis in males (that may extend up to 14 to 16 subcaudal scales down the tail) and the paired cloacal musk gland of females (that may extend up to 6 subcaudal scales). The needle was angled at 45 to 60 degrees and positioned in the ventral midline. The needle was advanced in craniodorsal direction, with a slight negative pressure maintained. If the needle touched a vertebral body it was withdrawn slightly and redirected more cranial or caudal. In snakes belong to Group 2 after a dorsal recumbence the heart was located by palpation and it was immobilized. The needle was inserted at 45 degrees in a craniodorsal direction into the apex of the beating ventricle. Blood often enters the syringe with each heartbeat.

Results and discussions

The time taken for blood collection varied significantly between anatomical locations and was markedly longer when the caudal ventral vein was used (52 ± 10 s, and more than 10 attempts) compared with cardiocentesis (12 ± 2s, and 1-3 attempts). We have found a number of problems using the caudal tail vein venipuncture technique. When used the punction of ventral tail vein the blood
volume was sometimes insufficient to perform a complete haematological profile and the contamination by lymph occurs frequently. We found no negative effects after blood sampling by cardiocentesis.

Conclusions

We found no negative effects due to blood sampling techniques from either collection site. All specimens remained healthy with no apparent symptoms of disease or dehydration. We recommend the sampling by cardiocentesis technique in horned vipers in future studies. Important benefits include: (1) the puncture site is easier to spot, (2) the time devoted to blood collection is significantly shorter; and (3) the failure of blood sampling is also reduced.

References