Ultrasonographic evaluation of the postprandial heart variation in juvenile Paraguayan anakondas (Eunectes notaeus)

Zerbe, P; Glaus, T; Clauss, M; Hatt, J M; Steinmetz, H W


Postprint available at: http://www.zora.uzh.ch

Posted at the Zurich Open Repository and Archive, University of Zurich.
http://www.zora.uzh.ch

Originally published at:
ULTRASONOGRAPHIC EVALUATION OF THE POSTPRANDIAL HEART VARIATION IN JUVENILE PARAGUAYAN ANAKONDAS (EUNECTES NOTAEUS)

ZERBE P¹, GLAUS T², CLAUSS M¹, HATT JM¹, STEINMETZ HW¹

¹Clinic of Zoo Animals, Exotic Pets and Wildlife, Vetsuisse Faculty, University of Zurich, Winterthurerstr. 260, 8057 Zurich, SWITZERLAND; hsteinmetz@vetclinics.uzh.ch
²Department of Internal Medicine, Vetsuisse Faculty, University of Zurich, Winterthurerstr. 260, 8057 Zurich, SWITZERLAND

In small animal and human cardiology, the ultrasonographic evaluation of the heart is one of the most important tools for diagnostic purposes (GLAUS et al., 2004a; GLAUS et al., 2004b). In contrast, minimal diagnostic information exists in the literature about the reptilian heart. Until now, only a few physiological studies and single case reports about pathologic ultrasonographic findings had been published (ISAZA et al., 1993; SCHILLIGER et al., 2005; SNYDER et al., 1999). Nevertheless, macroscopic anatomical studies have shown that the snake heart can vary considerable in size (ANDERSEN et al., 2005; SECOR and DIAMOND, 1997; SECOR et al., 2000; STARCK et al., 2004; WANG et al., 2001). Therefore, the goal of the present study was to document ultrasonographically physiologic, postprandial adaptations in the heart of juvenile Paraguay anacondas (Eunectes notaeus).

The heart of 6 juveniles anacondas (110 - 216 g; 62 - 79 cm; female) was evaluated ultrasonographically before and after feeding a prey between 9 - 16 % (mean: 12.6 % relative prey mass) of the snakes body weight. Animals were housed under standardised conditions (26 – 28 °C, 65 % humidity). The heart was assessed with a Philips HDI 5000 computer ultrasound system (Philips Medical Systems, Bothell, WA, USA) with a microconvex transducer of a frequency of 7.5 MHz before, and 3 and 10 days after feeding. Measurements included body-length, -weight and -circumference on the heart level. Heart frequency, ventricle volume and myocard thickness were assessed from ultrasonographic evaluations. All statistical analyses were performed using a statistics program for personal computers (Statistica™ 7.1, StatSoft® Inc., Tulsa, Oklahoma 74104, USA). Statistical significance was set at p < 0.05. The objective of the analyses presented in this report was to determine whether there were significant differences in heart measurements between the different diet periods. No significant changes in body-length, -weight and -circumference were found. Ventricle volume, myocard thickness and heart frequency changed significantly during the study. Previously described signs of a hydropericard were not found as were documented in case reports (SKLANSKY et al., 2001) and in own preliminary investigations in Boidae.

The present study showed that the ultrasonographic evaluation of the snake heart is even in small individuals possible and that physiologic postprandial changes in the heart have to be considered in the ultrasonographic evaluation of the snake’s heart.

Acknowledgments

The authors thank Zurich Zoo for providing the snakes, the ‘Schweizerische Vereinigung für Wild-, Zoo- und Heimtiermedizin’ for their financial support and Sandra Mosimann and Sabrina Riedle for animal care.
REFERENCES