Researchers find a place to take a python's pulse

September 5 2024, by Holly Hartigan

Researchers measure the pulse rate at the temporoorbital artery of a ball python. Credit: Nicola Di Girolamo/Provided

Stethoscopes don't work well on reptiles. Scales interfere with sound transmission. Scared tortoises and turtles hide behind their legs, covering their hearts.

Researchers in the College of Veterinary Medicine have discovered they can consistently measure reptiles' pulse rate in an easy-to-reach spot on the back of the head, and that pulse rate corresponds to the heart rate in healthy reptiles. The technique requires an ultrasonic Doppler flow detector, a common instrument found in most veterinary clinics.

While the location to obtain a python's heart rate is well known, a location to obtain a pulse rate had not yet been accurately described, said Dr. Nicola Di Girolamo, associate professor of exotic animal medicine. The ability to measure pulse rate allows for a more complete cardiovascular examination.

They reported their findings on ball pythons in "Temporoorbital Pulse Rate Can Be Obtained in Ball Pythons (Python regius) of Any Size and Age and Agrees With Heart Rate" in the journal *Veterinary Record*, published Sept. 4.

It started with a sick bearded dragon.

The lizard had an aneurysm, which caused the temporoorbital artery at the back of its head to become enlarged.

"You could put the Doppler there, and you would hear the pulse rate very well," said Di Girolamo, corresponding author of the study. "We thought it was only happening because the vessel was so distended, but then we checked another bearded dragon kind of randomly in the same area, and we realized that it had the pulse there."

The researchers found the pulse in the same location in other species: leopard geckos, turtles, tortoises and snakes.

"The sick bearded dragon started this whole process of figuring it out," Di Girolamo said. "Even if it's abnormal in this patient, it's actually something you can find in other reptiles."

For the study, two operators used a standard veterinary ultrasonic Doppler flow detector to obtain a pulse rate at the temporoorbital artery and a heart rate of 40 healthy ball pythons of varying ages and sizes.

They found the median heart rate and median pulse rate were both 60 beats per minute, with a mean difference between the pulse rate and heart rate of 1.2 beats. When pulse rate and heart rate were measured at the same time, they were synchronous.

Di Girolamo said he is seeing more reptile owners who are willing to seek advanced care for their pets, including surgery. This method provides another way to listen to a reptile's heartbeat while it's under anesthesia or to treat an animal that's feeling defensive. "It can be easier and less stressful to do it this way," he said.

More information: Mio Ito et al, Temporoorbital pulse rate can be obtained in ball pythons (Python regius) of any size and age and agrees with heart rate, *Veterinary Record* (2024). DOI: 10.1002/vetr.4596

Provided by Cornell University