

## Determining Sex in Lizards

Because fights between territorial male lizards are violent and often fatal, reptile breeders frequently request sex determination before adding a new lizard to their group, especially for species that do not show evidence of sexual dimorphism.

This study aimed to evaluate diagnostic sensitivities of ultrasound, contrast radiography, and plain and contrast computed tomography (CT) for sex determination by identifying hemipenes in 4 popular lizard species: bearded dragons (*Pogona vitticeps*), Egyptian spiny-tailed lizards (*Uromastyx aegyptia*), blue-tongued skinks (*Tiliqua scincoides*), and Sudan plated lizards (*Gerrhosaurus major*).

Lizards of known sex ( $n = 19$ ; 10 female, 9 male) were each subjected to all 4 imaging modalities, with blinded evaluators. In a few subjects, thick tail scales prevented ultrasound. Otherwise, all

imaging was easily accomplished on nonsedated patients within 5 to 10 minutes; contrast agents were gently instilled through the cloaca. Contrast radiography and contrast CT were highly sensitive for detection of hemipenes (8/9 = 88.9% and 9/9 = 100%, respectively). With ultrasound and non-contrast CT, hemipenes were often difficult to distinguish from surrounding tissues. Although these results cannot be assumed to apply to other lizard species or juveniles, the methods and results from this study can serve as a reference for future research.

### Commentary

This article offers a safe, accurate method of determining sex in lizards. Although this article discusses several imaging modalities, the most clinically useful procedure for the exotic practitioner is radiography. Unlike other procedures in exotic pet practice that require expensive equipment and advanced training, the radiographic procedures detailed here uses readily available radiological equipment and water-soluble contrast media. The radiographic procedure is safe, minimally invasive, does not require anesthesia, and has a high degree of



accuracy. It is important to recognize the different radiographic appearance of urogenital anatomy between species. Based on accuracy, cost, and availability between the different imaging modalities, it is an easy decision to choose contrast radiography for sex determination in lizards.—Ajay Sharma, BVSc, MVSc, DVM, DACVR

### Source

Di Ianni F, Volta A, Pelizzone I, Manfredi S, Gnudi G, Parmigiani E. Diagnostic sensitivity of ultrasound, radiography, and computed tomography for gender determination in four species of lizards. *Vet Radiol Ultrasound*. 2015;56(1):40-45.

## Research Note: *Heterobilharzia americana*

*Heterobilharzia americana*, a schistosomal trematode, is endemic in the coastal southern United States; most cases occur in Texas and Louisiana. Definitive hosts are dogs, raccoons, and other mammalian species; lymnaeid freshwater snails are intermediate hosts. The adult parasites reside in mammalian mesenteric veins. They release their eggs, which migrate to the intestines and are excreted in the feces.

Once in freshwater, the eggs release ciliated miracidia, which penetrate the mantle of snails. The miracidia mature into cercariae in the snails before being released. Free-swimming cercariae then re-infect mammalian hosts by penetrating intact skin and migrating to the mesenteric veins. Aberrant migration can cause infection of the liver and other organs, which can cause granulomatous inflammation and fibrosis. *H americana* infections typically cause GI signs (eg, decreased appetite, weight loss, vomiting, diarrhea) and occasionally cause dermatitis or coughing from migration through the skin and lungs. Approximately half of reported cases have hypercalcemia of unknown cause.

A fecal sodium chloride sedimentation is usually necessary to diagnose this infection. Polymerase chain reaction is also available to test feces, liver, and intestinal biopsies. If samples are available, eggs and parasites can be found on histopathology of affected tissues. In this case report, an *H americana* diagnosis was made via cytology of fine-needle aspirates of the patient's liver. The authors concluded that cytology is a useful, accurate tool for diagnosing canine schistosomiasis.

### Source

Le Donne V, McGovern DA, Fletcher JM, Grasperge BJ. Cytologic diagnosis of *Heterobilharzia americana* infection in a liver aspirate from a dog. *Vet Pathol*. 2016;53(3):633-636.