Section 21

ARAV Infectious Diseases

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Moderators
Experimental Ferlavirus Infection in Corn Snakes: Pathogenesis and Virus Detection

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Session #084

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Ferlaviruses are important pathogens of snakes and have also been shown to infect lizards and chelonians. They are most commonly described in viperid snakes, but have also been found in a wide range of other families. They are a genetically diverse group of viruses that include at least four different genotypes. Factors that are believed to influence pathogenicity of ferlavirus infections include host species and virus genotype, although little is actually known about the pathogenesis of ferlavirus infections. A group of 12 corn snakes (Pantherophis guttatus) were intratracheally inoculated with a high dose of a genotype C ferlavirus that had been isolated from a captive group of corn snakes in Germany. The snakes were clinically observed and samples were collected over a period of 49 days. Samples were tested for the presence of ferlaviruses by virus isolation in cell culture and by PCR targeting the L gene. Blood was collected regularly and tested for anti-ferlavirus antibodies by hemagglutination inhibition (HI) testing. Virus was detected in all tissues sampled from all but one snake 28 days post infection. Increasing antibody titers were detected beginning on day 16 post infection by HI. This study provides information on the pathogenesis of ferlaviruses and the validity of different diagnostic measures as well as a basis for the development of treatment methods for ferlavirus infected snakes.

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Herpesviruses and Mycoplasma in Turtles and Tortoises in Europe

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Session #076

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Herpesviruses and mycoplasma have been frequently described in chelonians, particularly tortoises. Both are associated with disease of the upper respiratory and digestive systems, both have also been described in clinically healthy animals, and both are able to cause persistent infections in affected animals. The aim of this study was to determine the prevalence of both pathogens in samples from tortoises and aquatic turtles submitted to a diagnostic laboratory in Europe. Standard PCR methods were used for the detection of herpesviruses and mycoplasma, samples included oral swabs and nasal washes as well as various tissues and were obtained from both clinically ill and apparently healthy animals. A total of 642 chelonians were included. Of these, 240 (37.4%) were positive for mycoplasma, 45 (7.0%) were herpesvirus positive. Mixed infections were detected in 26 animals (4%: 57.8% of the herpesvirus positive animals and 10.8% of the mycoplasma positive animals). Both pathogens were found in clinically healthy and diseased animals and in both tortoises and turtles. The high number of mycoplasma and herpesvirus positive animals found in this study may not reflect the prevalence in captive chelonians in Europe in general, since the submitted samples were from animals that had been presented to veterinarians for various reasons. This is nevertheless interesting in demonstrating the importance of both pathogens in a wide range of species of captive chelonians.

Disclosure Statement: The authors are employed by a private lab (Laboklin), which offers diagnostic services for veterinarians.
Salmonella in Wild Green Iguanas (*Iguana iguana*) in the Florida Keys

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Session #332

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Intense controversy exists as to the origin of the green iguana (*Iguana iguana*) in the Florida Keys, a 120-mile long archipelago consisting of 43 islands connected by 42 bridges in the southeast United States. The large lizards have proliferated in number dramatically over the last 20 years to the point that they have been deemed an invasive pest and a source of zoonotic Salmonella. The county has made it legal to hunt and kill iguanas without the need for a permit. In order to document the Salmonella threat, a single-point-in-time prevalence study of the bacterium *Salmonella* species in wild green iguanas was conducted along the entire island chain. Samples from 24 iguanas were collected randomly from Key West (mile marker 0) to Key Largo (mile marker 100) from private property over a period of 30 hours. The animals were captured with a large net, controlled with protective gloves and then sampled using a sterile swab inserted deep into the cloaca (BBL Culture Swap Plus, Aerobic/Aerobic culture, Brecton Dickinson Company, Sparks MD 21152). Bacterial growth (7 different isolates) was found in all 24 animals sampled: *Salmonella* species (11), unspeciated coliforms (11), *Enterococcus*, non-pathogenic (8), *E. coli* (7), *Enterobacter* (3), coagulase-negative staphylococci (1) and *Pseudomonas* species (1). 10/11 *Salmonella* positive animals had at least 1 other bacterial isolate.
Detection of a Mycoplasma in a Carpet Python *(Morelia spilota)*

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Session #141

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Mycoplasma are frequently detected in tortoises and are a cause of upper respiratory disease in various tortoise species. Detection of mycoplasma in squamates is less frequently reported. Several snakes in a large collection of boas and pythons developed a low grade necrotizing stomatitis. One of the animals was euthanized and submitted for necropsy and diagnostic testing. Material from the oral cavity was tested for adeno, arena, ferla, and reoviruses using standard PCRs all of these PCRs were negative. The material was also tested for the presence of mycoplasma using a standard conventional PCR targeting the 16S ribosomal RNA gene used for the detection of mycoplasma in tortoises. This PCR was positive and the resulting amplicon was sequenced. Analysis showed the detected mycoplasma to be closely related to mycoplasma previously found in European tortoises and to a *M. testudineum* strain (95% identity each).

*Disclosure Statement:* The authors are employed by a private lab (Laboklin), that offers diagnostic services for veterinarians.
Protozoan Pulmonary Disease in a Carpet Python

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Session #357

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Respiratory disease is a common presentation for reptiles in private practice. With respiratory disease, significant morbidity can result. There is a relatively small surface area available for gas exchange in the reptile lung. Additionally, the lungs are compartmentalized and there is poor drainage through the bronchi. Without a true diaphragm, coughing cannot effectively assist in removal of debris. Respiratory disease (upper or lower) can arise from a variety of causes. In addition to bacterial infection, viruses, fungi, inflammation, foreign bodies, trauma, neoplasia and parasites have all been documented as causes of reptile respiratory disease.

This case of an 8-year-old Australian jungle carpet python (Morelia spilota cheynei) demonstrates the importance of a thorough workup to determine the cause of the condition. Utilizing in-house diagnostics can give valuable information quickly, revealing some conditions that may be missed in outside laboratories. Outside laboratories can augment in-house diagnostics with detailed testing. In this case, flagellated protozoa were detected on an in-house cytology from trans-tracheal wash. The parasites would likely be missed by an outside laboratory due to the short lifespan outside of the body. Outside laboratories provided valuable information regarding drug sensitivity for secondary bacterial pneumonia and ruled out viral causes of disease. Together, these diagnostics led to a treatment plan, which successfully treated the pulmonary disease.