Ranavirus Infection in an African Spurred Tortoise

Presented by Gregory Krane, DVM
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Signalment and History

- 25+ yr old female African spurred (sulcata) tortoise (*Geochelone sulcata*)
- Part of a large collection of multiple reptile species
- Sudden death of 3 sulcatas from single pen
- Few others developed URI in following days
- No other species affected
- Patient TS15-1 found dead 3 weeks after initial mortality event
Primary Gross Findings
Ulcerative & Necrotizing Glossitis, Stomatitis, & Pharyngitis
Leading Differential

Herpesvirus
Microscopic Diagnoses
(Slide Set Tissues)

- Necrotizing splenitis & glossitis, with rare basophilic cytoplasmic inclusions
- Vasculitis, fibrinoid & heterophilic, with hemorrhage & thrombosis, spleen & tongue
Confirmatory Diagnostics

- Diagnosed as ranavirus via qPCR in prior patients & TS15-1
- Sequencing of major capsid protein (MCP) 100% similar to Frog Virus 3 (FV3)
  - FV3 MCP broadly conserved across ranaviruses
- Followed by in-situ hybridization in TS15-1 for ranaviral DNA & mRNA
Ranavirus Genus

- dsDNA viruses of *Iridoviridae* family
- May have evolved from a fish pathogen
- First isolated in amphibians in 60’s
  - Major amphibian mortality events in 90’s
- Infect amphibians, reptiles, & fish
  - Generally causes disease in juveniles
  - Can be transmitted between similar species
  - Mosquito vector?
Ranavirus in Chelonians
Classic Gross / Micro Lesions

- Ulcerative stomatitis, tracheitis, esophagitis
  - DDx: herpesvirus
- +/- pneumonia, peripheral edema, rhinitis

- Widespread fibrinoid vasculitis with thrombosis
- Necrotizing splenitis
- Basophilic, epithelial, endothelial, hematopoietic, & histiocytic cytoplasmic inclusions (rare)
  - 90-150 nm diameter icosahedral viral particles
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References

• Brenes R et al. Transmission of ranavirus between ectothermic vertebrate hosts. PLoS one. 2014 Mar;9(3);e92476.