Signalment:  male, term fetus, Golden Retriever dog

History:  A Golden Retriever bitch (the dam of this term fetus) was presented to a private veterinary practice with dystocia after delivering two puppies.  Five more puppies were removed by Caesarian section.  One of these puppies had anasarca, had lodged in the birth canal, and was the apparent cause of the dystocia.

Relevant Clinical Findings: The bitch was not known to be pregnant at the time of purchase.  It had been treated with trimethoprim sulfa for a urinary tract infection about 60 days before whelping.  Of the 6 other puppies in this litter, one was stillborn, but the remaining 5 were clinically normal through the neonatal period and are alive and healthy (without related problems) 2 years later.

Gross Findings:  The fetus with anasarca had generalized soft tissue edema and filling of thoracic and abdominal cavities with serosanguineous fluid.  Autolysis was minimal.  Yellow-white plaques were noted on the surface of the liver.
2010 ACVP Mystery Slide Session

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Case #: 1

Slide #A09-3028-1c

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Histological Description: The gross plaques on the surface of the liver are areas of dystrophic mineralization over foci of hepatic necrosis. Necrotic foci are randomly distributed, up to 1 cm in maximal dimension, and lytic to hemorrhagic with accumulation of fibrin and cellular debris, but with minimal leukocytic infiltration. Fibrin thrombi are in hepatic sinusoids and capillaries. Larger hepatic vessels have focally eroded endothelium with adherent, partially organized thrombi. Intact endothelial cells in affected vessels are hypertrophied and crowded; a few neutrophils or lymphoid cells are noted in vascular walls. Some hepatocytes and some endothelial cells at the borders of necrotic foci have marginated chromatin with faint eosinophilic intranuclear inclusions. Insipissated bile is noted in some ductules and canaliculi. Hepatic capsular mesothelial cells, between mineralized plaques, are hypertrophied.

Diagnosis: Multifocal hepatic necrosis with vasculitis and thrombosis

Cause: Canine herpesvirus-1 (suspected)
Comments: Only formalin-fixed liver was available for evaluation, so no tissue was submitted initially for microbiologic testing. The recognition of multifocal hepatic necrosis, vasculitis, and (albeit difficult to find) intranuclear inclusions suggested viral infection, especially with canine herpesvirus-1 (CHV-1), although CHV-1 DNA was not amplified by a polymerase chain reaction test. No adenoviral antigen was detected in hepatic sections with immunohistochemistry, and no bacteria were detected with Warthin-Starry histochemistry.

Canine herpesvirus infection can result in abortion, stillbirth, and perinatal death.¹,²,³ Pathologists may see the disease more commonly in puppies in the first 3 weeks of life; such puppies are thought to have contracted the infection during parturition.²,³ The characteristic foci of necrosis, with variable presence of intranuclear inclusions, in liver, spleen, kidney, heart, and other tissues, have also been found in canine fetuses after natural or experimental in utero infection with CHV-1.¹,²,³ This case was considered unusual because only 2 of 7 fetuses died, and the puppies that were alive at C-section did not develop disease in the postnatal period. Anasarca, observed in only one fetus, is not a typical lesion of canine fetal herpesviral infection. However, endothelial injury is common in herpesviral infection and may have contributed to the development of anasarca in this case.

References:


Submitted by Laura Baseler, DVM, Peg Miller, DVM, PhD, DACVP, Jeffrey Klemens, DVM, and Ramesh Vemulapalli, DVM, PhD

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