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VIRGINIA ANIMAL DIAGNOSTIC NEWSLETTER

A joint publication between Virginia Department of Agriculture and Consumer Services and the Virginia Tech Animal Laboratory Services

EDITORIAL

Highly Pathogenic Avian Influenza (HPAI) in US Livestock

An outbreak of HPAI A(H5N1) was reported in March of 2024 at a dairy farm in Texas. The disease affected lactating cows and presented with fevers, decreased milk production, low appetite (decreased dry matter consumption). Other symptoms were also reported, such as depression, dehydration, diarrhea and changes on the physical aspect of the milk, which was described as thick, colostrum-like milk that varied in color. Affected cows typically recovered after 2 or 3 weeks and no deaths were reported. Since the initial diagnosis, outbreaks of HPAI have been detected in cattle in 9 states and have affected 34 dairy herds.

The disease appears to have been introduced by wild birds. However, once infected, transmission between cattle was suspected. While cases among humans in direct contact with infected animals are possible, the current risk to the public remains low. The virus is found in milk but there is currently no evidence of a risk to consumer health as long as milk and milk-products are pasteurized. At this stage, there is no concern about a shortage of the milk supply in the US and there should be no impact in the price of milk or other dairy products in the coming months.

The USDA encourages producers to work with their veterinarians to report cases of sick cattle to State Animal Health Officials and their APHIS Veterinary Services Area Veterinarian in Charge. Veterinarians should submit samples to a National Animal Health Laboratory Network (NAHLN) laboratory for initial testing. A federal order was also established to require movement of cattle across state lines. The Centers for Disease Control and Prevention and USDA websites contain up to date information about outbreaks in cattle, risk to humans, cattle movement regulations, and other valuable information.

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Virginia-Maryland
College of **Veterinary Medicine**



VIRGINIA DEPARTMENT
OF AGRICULTURE AND
CONSUMER SERVICES

Horses



Equine Herpes Virus Abortions

A near-term aborted equine fetus was submitted for necropsy to the Lynchburg Regional Animal Health Laboratory in March 2024. This was the second abortion on the breeding farm for the season, though the first was determined to be an ascending fungal placentitis with negative tests for several communicable diseases. The mare showed no signs of impending labor, and the fetus was found dead, surrounded by the placenta. The foal was submitted with the entire intact placenta. Mild focal discoloration of the placenta at the cervical star was noted, along with mild focal hemorrhages in the pulmonary artery and heart. Samples were collected for testing for Leptospirosis and Equine Herpes Virus (EHV), as well as histopathology.

That evening, the farm experienced another abortion, and an area veterinarian was contacted to perform an exam on the mare and aborted fetus, with similar samples taken as the first case. The following week, a third aborted fetus was found and submitted to the lab. The third foals' findings were similar to the first foal submitted. The foal was submitted with the entire intact placenta that showed signs of placentitis, along with a significant amount of thoracic fluid and dark, congested lungs.

The testing from the first foal was positive for non-neuropathogenic Equine Herpes Virus-1 on PCR, and was negative for Leptospirosis on both PCR and MAT tests. Histopathology showed varying inflammation and cell death in the lungs, heart, adrenal gland, spleen, and placenta; viral inclusions were seen in the lungs and adrenal gland. The second and third fetuses also tested positive for EHV-1 on PCR. Though there were subtle variations in microscopic lesions across these animals, all consistently exhibited a severe broncho-interstitial pneumonia with extensive cell death, intranuclear viral inclusions, and viral syncytial cells typical of equine herpesvirus-1 infection.

Equine Herpes Virus-1 is a known cause of abortions in horses. Different equine herpesviruses can cause a wide

range of signs and diseases, including respiratory (known as rhinopneumonitis or “Rhino”), venereal (known as “coital exanthema”), and occasionally, severe neurologic (known as Equine Herpes Myeloencephalopathy or EHM) disease. EHV-1 typically causes respiratory disease and abortions.

EHV-1 is typically spread from horse to horse and is carried by exposed horses for life. The virus may begin “shedding” after a period of stress for the animal, such as other illnesses, shipping, or showing. Pregnant horses that are exposed during late gestation can have the virus directly infect the fetus, causing severe disease in the fetus, with little to no disease in the mare. The time of exposure to abortion can vary from 2 weeks to 8+ months post-infection. The lack of warning signs in these mares is common for EHV abortions, which, combined with the long timeline for abortions to occur, makes it challenging to determine the disease and where the infection originated. “Abortion storms” (multiple pregnant horses aborting closely together), such as in the cases seen here, are common with EHV. There are typically no lesions in the mare’s reproductive tract, and future pregnancies are unaffected. There is no available treatment, but antiviral drugs have been utilized and may be helpful.

Prevention focuses on reducing exposure risks and vaccination. Preventing pregnant mares from being exposed to horses attending events with other horses reduces the risk of naïve exposure to EHV. The American Association of Equine Practitioners vaccination guidelines recommend vaccinating pregnant mares at 5-, 7-, and 9-months gestation with a vaccine labeled for prevention of EHV abortion. Vaccination is not foolproof, and outbreaks even amongst well-vaccinated animals have been reported.

Recommendations for abortion storms include placing mares in strict isolation and for aborted fetuses and fetal membranes to be placed in a leakproof container and destroyed. Anyone who is handling the mares should not interact with other horses, all bedding should be destroyed, and stalls/in-contact equipment should be disinfected. Currently, there is not enough information to be sure how long the virus survives within the environment, but it is at least one month with a high risk of fomite transmission. The virus is easily destroyed with heat and contact with virucidal disinfectant.

Taylor Young DVM. Lynchburg Regional Animal Health Laboratory – VDACS

Jamie Horstmann DVM. Harrisonburg Regional Animal Health Laboratory – VDACS

Sheryl Coutermarsh-Ott DVM, PhD, DACVP. Anatomic Pathologist – VDACS

Halicephalobus gingivalis in a horse

A 12-year-old Quarter horse mare, recently relocated to West Virginia from Florida, was euthanized due to neurologic signs. The mare was recumbent, afebrile, normal heart and respiratory rates, and with positional nystagmus. Vaccination history was incomplete. Externally there were a few minor scrapes on the left side of the head that corresponded with subcutaneous bruising. The right kidney had a round, approximately 10 cm diameter nodular-like lesion protruding through the surface. The stomach lining was irritated with slight ulceration. Ancillary testing included: rabies testing, EHV-1, Equine protozoal meningo-encephalitis, full set of tissues for histopathology, aerobic culture on lung/liver/kidney and fecal float. Histologic findings revealed severe, multifocal, chronic, granulomatous nephritis with larval nematodes. The brain sections contained multifocal, chronic, necrotizing, granulomatous, meningoencephalitis with larval nematodes, with morphology and location compatible with *Halicephalobus gingivalis*. This saprophytic nematode affects equids, ruminants and humans, and infection is rare. This nematode is frequently found in the brain along with the kidney, liver, lung, optic nerve, and heart of the host. The mode of transmission is presumed to be through oral mucosa or skin wounds. Antemortem diagnosis is difficult, and the anthelmintic therapy has limited success, with most cases deteriorating.

Tom Lavelle DVM. Wytheville Regional Animal Health Laboratory- VDACS

Ruminants



Neospora caninum in a calf

An aborted female bovine fetus, approximately 125-day gestation, was submitted with placenta for postmortem examination. The fetus was moderately autolyzed throughout, with serosanguineous fluid within the subcutis and body cavities. No significant gross lesions

were present. *Neospora caninum* was detected by PCR in brain samples and was the cause of abortion. Samples collected at necropsy were negative for BVDV, bovine herpesvirus-1, *Leptospira* spp, *Brucella* spp., *Campylobacter* spp., and *Histophilus somni*. *Neospora caninum* is a protozoal parasite that can cause abortion in dairy and beef cattle throughout the year. Typically, cows that abort do not show clinical signs of disease. Parasitic infection can be maintained in asymptomatic carrier cows and transmitted to the fetus during pregnancy.

Thomas E. Cecere DVM, PhD, DACVP. Virginia Tech

Atresia coli in a calf

A four-day-old calf with severe abdominal distention, dehydration, and history of no meconium or feces since birth was submitted for necropsy. A markedly dilated cecum and ascending colon with abundant meconium was observed. A very narrow, approximately one-meter-long segment of descending colon communicated with the anus. The proximal end of this segment finished in a blind-end and was loosely attached to the ascending colon through fibrous and adipose tissue. There was a lack of formation of the spiral colon. All these features indicate a congenital malformation of the intestine, which can be classified as atresia coli. In ruminants, atresia of the colon is the most frequent intestinal malformation, and leads immediately to intestinal obstruction, with dilation of the gut immediately proximal to the blind end. Due to the lack of a whole segment, we speculate about a vascular event during organogenesis, similar to those described in humans.

Francisco R Carvalho DVM, DSc, DACVP. Virginia Tech

Companion Animals



Histoplasmosis in a cat

A 10-month-old, spayed female, domestic longhair cat was referred to the Virginia Tech Veterinary Teaching Hospital due to lethargy, weight loss, sudden onset of blindness, third eyelid prolapse, and disorientation. The cat, which was undergoing a gradual reduction in prednisone doses for a skin allergy, also had a history of otitis that was previously treated. During the physical examination, the cat appeared dull and slightly dehydrated, with an unkempt coat, and both pupils were dilated. Laboratory tests revealed mild thrombocytopenia and moderate hypoproteinemia, but other CBC and chemistry panel results were normal. An abdominal ultrasound showed mild changes to the spleen and hepatic/portal lymphadenopathy that were interpreted as likely inflammatory/reactive processes, as well as a suspect miliary pattern on thoracic radiographs that were concerning for fungal pneumonia. The condition worsened during the hospital stay, with the cat starting to experience seizures. An MRI indicated thickened meninges and abnormal growth in the olfactory bulb extending into a lobulated mass in the left frontal sinus and rear nasal cavity, causing bone lysis. Additionally, bilateral parotid lymph nodes were enlarged and sampled for cytology. On cytology, both lymph nodes had a mild histiocytic proliferation without other indications of reactivity (i.e., lymphoid and plasmocytic hyperplasia or neutrophilic inflammation), which was an unusual finding and speculated to be associated with the corticosteroid therapy. Rarely, these histiocytes contained small (2-4 μm), ovoid yeast with a thin halo and moon-shaped nuclear material, consistent with *Histoplasma* sp. (**figure below**).

Histoplasmosis is the second most prevalent systemic fungal infection in cats and is commonly reported

in Virginia. The disease typically arises from inhaling or ingesting *Histoplasma* spores from soil contaminated by bird and bat feces. Both outdoor and indoor environments can pose risks, with indoor exposures possibly coming from potted plants and unfinished basements. Cats with Feline Leukemia Virus (FeLV) are more susceptible to infection. Symptoms are generally mild and nonspecific, such as lethargy, weight loss, poor appetite, fever, and respiratory issues, which may extend to lymph nodes, skin, and eye lesions. Diagnosis usually requires microscopic analysis of tissue samples to find fungal elements, supported by antigen tests in fluids like blood, urine, BAL, and others. Treatment primarily involves prolonged administration of oral antifungal drugs, typically over six months, with a success rate of about 66%, although outcomes vary based on the disease's severity at diagnosis.

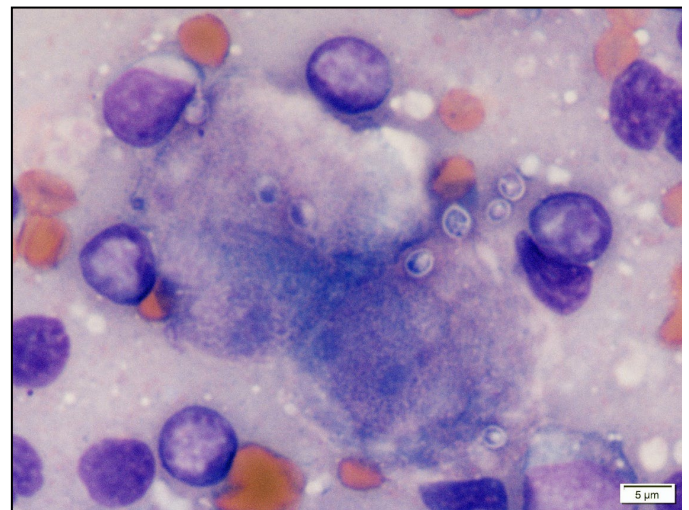


Figure: Two histiocytes are surrounded by lymphocytes and contain eight *Histoplasma* sp. yeasts.

Priscila B. S. Serpa DVM, MSc, DSc, DACVP (Clinical), Virginia Tech

High-grade glioma in a Boxer dog

A seven-year-old female Boxer dog was presented to the neurology service of the Virginia Maryland College of Veterinary Medicine teaching hospital, with a 1-week history of collapsing, behavior changes and pelvic limb ataxia. The animal died shortly after being admitted, and a necropsy was performed. The most significant findings were restricted to the brain and spinal cord, with a herniated cerebellum, dilated lateral ventricles

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(hydrocephalus), and a dilated central canal in the spinal cord (hydromyelia). A red soft mass was protruding into the left lateral ventricle from the adjacent white matter and was also occluding in the third cerebral ventricle. A high-grade glioma was identified with histopathology. Gliomas can arise from the astroglia and glial precursor cells. In this case, neoplastic cells share features with anaplastic astrocytoma and/or glioblastoma (formerly known as glioblastoma multiforme). Clinical signs vary depending on site and size of the tumor. The tumor was completely occluding the cerebral aqueduct, which explains the presence of hydrocephalus. Also, hydromyelia was noted, which likely have a similar pathogenesis.

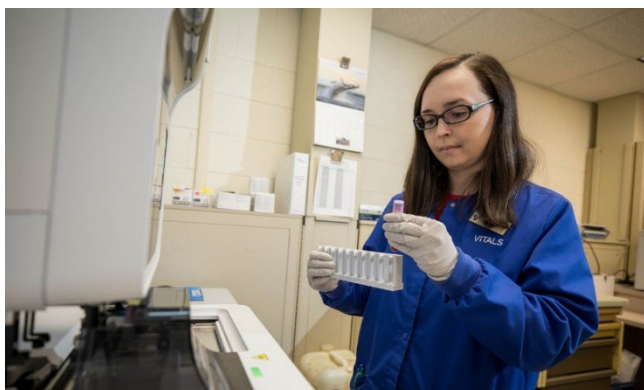
Francisco R Carvalho DVM, DSc, DACVP. Virginia Tech

This summer, we will welcome three new residents to the ViTALS team. Dr. Alex Reddy, VMCVM class of 2024, will remain in Blacksburg for an Anatomic Pathology residency and PhD. We are so excited that she decided to join us! Dr. Jasmine Yeh and Dr. Laura Contreras will be joining us as Clinical Pathology residents.

ViTALS was approved for testing of Equine Infectious Anemia by USDA. ViTALS will provide ELISA testing for Equine Field Services clients as well as regional veterinarians. ViTALS is also approved for HPAI testing in dairy cattle. Requests for testing must be submitted by a veterinarian.

Tanya LeRoith DVM, PhD, DACVP. ViTALS Director

LABORATORY NEWS



ViTALS

The College held its annual Faculty Awards reception to recognize outstanding faculty. ViTALS faculty members were among those recognized at the reception. Roger Ramirez-Barrios was given both the Outstanding Instructor Award by the class of 2027 and a Virginia Tech Certificate of Teaching Excellence. Teresa Southard was awarded the Edward Thompson Professional Award for her research in advancing forensic techniques, which she applies to legal cases submitted to ViTALS.

We are excited to announce that Dr. Jessica Gilberte will be joining us as our new Clinical Microbiologist. Dr. Gilberte received her DVM and PhD from NC State University, and was most recently a faculty member in VCOM. We look forward to her contributions to Microbiology and Serology.

VDACS

Highly Pathogenic Avian Influenza Virus has been detected in dairy cattle in the United States, prompting the need to onboard capabilities to test milk for the virus. Federal orders have restricted interstate movement, enhancing surveillance through pre-movement testing of lactating dairy cows. As a Level 1 NAHLN system, VDACS Office of Laboratory Services has worked hard to ensure preparedness for this testing at the Harrisonburg Laboratory. Multiple samples have been tested thus far, and we remain confident in the ability to detect the virus if it is present. Additionally, the Harrisonburg Laboratory is busy with Avian Metapneumovirus (aMPV) serology testing after the nationwide disease outbreak in commercial poultry flocks. In Warrenton, analysts are working on bringing in CL SHI testing capabilities and are continuing to maintain a heavy necropsy and CEM culture load. The Wytheville Laboratory is in full swing of annual fish testing in support of Virginia's Department of Wildlife Resources and some limited private producers. This testing covers both diagnostic and regulatory testing for fish health in the Commonwealth and surrounding states. The Lynchburg Laboratory has seen a steady volume of necropsies after resuming this service in November, and has been maintaining a steady workload regarding to PCR and Food Safety testing.

Our summer student internship program will resume in May at all four laboratory locations. This internship program is a paid opportunity to support the development of student interest in laboratory diagnostics. Students are college

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level with required science coursework and will spend the summer working as support for testing in the labs.

The Warrenton Regional Animal Health Laboratory is the last of the four laboratories to officially become a member of the National Animal Health Laboratory Network (NAHLN) as a Level 1 Branch Lab. We are so excited to have them on board, and this completes the onboarding of all VDACS Animal Health Laboratories into the NAHLN. Congrats, Warrenton!

We are always open to feedback and ideas for testing to further assist our agricultural community. It is our goal to make this lab system the best it can be to further serve our clients. Our partnership with the Virginia Tech Animal Laboratory Services Lab (ViTALS) continues to evaluate ways to collaborate and expand testing services. Whether by utilizing data for reports or enhancing testing capabilities, we look forward to continuing to work together and with all of you.

**Jessica Walters DVM, PhD, DACPV. Program Manager,
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