

NEWSLETTER

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BASISPHENOID FRACTURE IN A HORSE BY CECILIA DEGIOVANNI, DVM

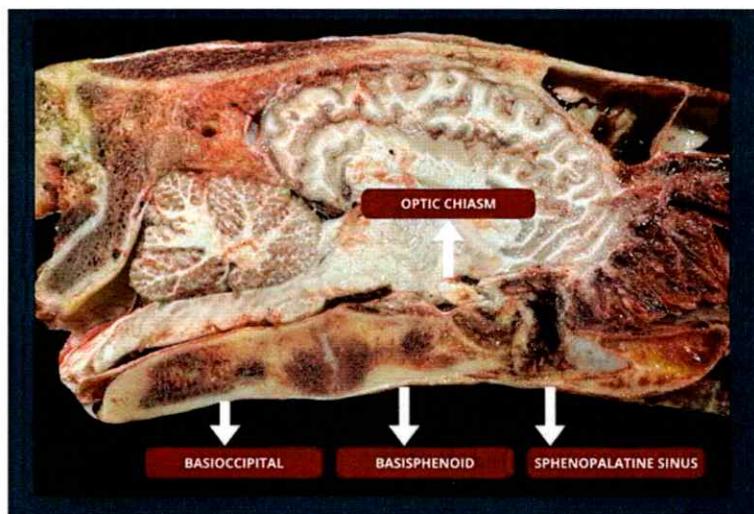
A 2-year-old, female, quarter horse was necropsied. The clinical history was that the mare flipped while on a walker, striking the ground with her side and head. Following the incident, she exhibited profuse nasal bleeding, bilateral mydriasis, and blindness. After nine days without clinical improvement of vision, the mare was euthanized.

On gross examination, the rostral part of the basisphenoid bone at the level of the optic nerve tract, just caudal to the sphenopalatine sinus, had a complete, closed, comminuted, and compressive fracture. At the fracture site near the optic nerve tract, the rostral fragment of the basisphenoid bone was displaced caudally approximately 1 cm over the caudal basisphenoid fragment. Surrounding soft tissues were edematous and dark red.

Clinical signs were attributed to traumatic nerve damage secondary to the fracture coupled with subsequent hemorrhage and edema in tissues surrounding the optic nerve.

Head trauma is more common in young versus older horses due to a lack of training experience and/or overexcitability. Fracture of the basisphenoid and/or basioccipital bones occur most often when horses fall over backwards and strike the ground with the poll of the head. Hyperextension of the head creates tension in the musculature of the neck (rectus capitis ventralis major and minor, and longus capitis ventralis) that insert in the base of the skull and cause avulsion fractures.

Rupture of the musculature and associated vasculature results in hemorrhage manifesting as acute profuse nasal bleeding. Other clinical signs are associated with damage to the optic nerve and brain, and include blindness, seizures, nystagmus, anisocoria, unconsciousness, and ataxia.



Cut section of equine skull with lesion.

References:

1. Ramirez O, Jorgensen JS, Thrall DE. Imaging basilar skull fractures in the horse: a review. *Vet Radiol Ultrasound* 1998;39:391-395.
2. Vitale V. et al. Basisphenoid bone fracture in two juvenile horses with different clinical presentation. *Vet. Rec. Case Rep.* 2021;9 (3).
3. Lim CK, Saulez MN, Viljoen A, Carstens A. Basilar skull fracture in a Thoroughbred colt: radiography or computed tomography? *J S Afr Vet Assoc.* 2013;19:84(1).



RESURGENCE OF TULAREMIA

BY TIFFANY TOLBERT, DVM

In the spring of 2024, the Utah Division of Wildlife Resources reported finding an unusual number of deceased beavers and nine were necropsied to determine the cause(s). The most common findings were multifocal necrosis of the liver and/or spleen. Due to the species affected and lesions seen, liver and spleen samples were sent to the Utah Public Health Laboratory for tularemia testing. *Francisella tularensis*, the bacterium responsible for tularemia, was detected in seven of the nine beavers.

Although the bacteria can be found in the environment, it typically does not cause outbreaks as seen at this time. Moreover, during April of 2025, an additional six beavers and one muskrat were found dead in the same area as the previous beavers. *F. tularensis* was identified in spleen and liver samples from three of the beavers.

F. tularensis is a pleomorphic, gram-negative coccobacillus endemic to North America, Europe, and Asia. Tularemia, known also as rabbit fever, hare plague, and deerfly fever, is a potentially fatal zoonosis.



Peritonitis in a beaver diagnosed with tularemia.

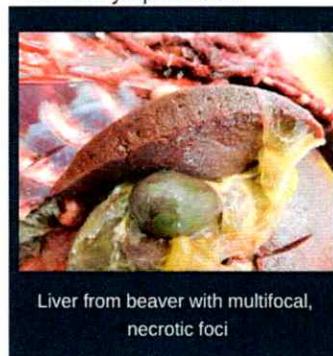
The disease can be found in a multitude of different hosts including cats, dogs, livestock, and human beings, but the main reservoirs are ticks, deerflies, rodents, and rabbits. Transmission occurs through tick or deerfly bites, scratches and/or bites from infected animals, or through exposure from contaminated air, food, water, or carcasses.

Of the susceptible species, rabbits, cats, and nonhuman primates are known to have fatal infections; rabbit fatalities are especially common. In cats, clinical manifestations include but are not limited to anorexia, fever, abscesses, lymphadenopathy, sepsis, oral ulcers, and pneumonia. By contrast, in dogs tularemia typically presents as a self-limiting fever or subclinical infection. Since clinical manifestations are non-specific, necropsy findings suggestive of tularemia include off-white, miliary, foci in the liver and less often in the spleen, lung, kidneys, and lymph nodes. These foci are due to areas of coagulative necrosis. An atypical finding seen in five of the beavers necropsied was mesenteric peritonitis. This presentation has not been previously reported to be associated with tularemia, but another inciting cause was not identified.

Tularemia is diagnosed through bacterial culture, PCR-based assays, or serological testing.

In deceased animals, liver and spleen samples are preferred. Samples must be submitted to a laboratory approved to test for tularemia. Since tularemia is a reportable disease in Utah, communicate diagnoses to the state veterinarian's office.

In human beings, tularemia presents in various forms. The most common is ulceroglandular, which occurs after handling an infected animal or following a bite from a tick or deer fly. A skin ulcer develops at the site of bacterial exposure followed by regional lymph node swelling. The glandular form is due to similar exposure but results only in swelling of regional lymph nodes. The oculoglandular form occurs when the microbe is transferred from contaminated hands to the eyes. Ocular inflammation and swelling of lymph nodes cranial to the ears follows. The oropharyngeal form follows ingestion of contaminated food or water and presents with oral ulcers, pharyngitis, tonsillitis, and swelling of cervical lymph nodes.



Liver from beaver with multifocal, necrotic foci

The pneumonic form occurs when aerosolized *F. tularensis* is inhaled and manifests as coughing, chest pain, and dyspnea.



Spleen from beaver with multifocal, fibronecrotic foci

The typhoidal presentation is the most difficult to diagnose because it is characterized by any combination of nonspecific generalized symptoms.

Since tularemia can cause severe disease in humans, prevention is crucial. Methods to minimize exposure include wearing clothes that cover arms and legs, removing any attached ticks promptly, avoiding drinking untreated surface water, checking areas for carcasses before mowing or using a mask during mowing and landscaping activities, using gloves when handling animals (especially those known to carry the disease, such as rabbits and large rodents), and cooking game meat thoroughly. When considering a diagnosis of tularemia, plague should be considered as a differential diagnosis as it may manifest with similar clinical findings.

References:

1. Utah Division of Wildlife Resources. DWR confirms beavers killed by disease; urges public to report any Dead Beavers. Utah Division of Wildlife Resources - News. April 15, 2024.
2. Birchard SJ, Sherding RG. Saunders Manual of Small Animal Practice. 3rd Edition. Saunders Elsevier; 2006.
3. Centers for Disease Control and Prevention. Tularemia. Centers for Disease Control and Prevention. May 15, 2024. Accessed May 20, 2025. <https://www.cdc.gov/tularemia/site.html#hcp>.
4. Sykes JE. Tularemia in animals - generalized conditions. Merck Veterinary Manual. March 2025. Accessed May 20, 2025.

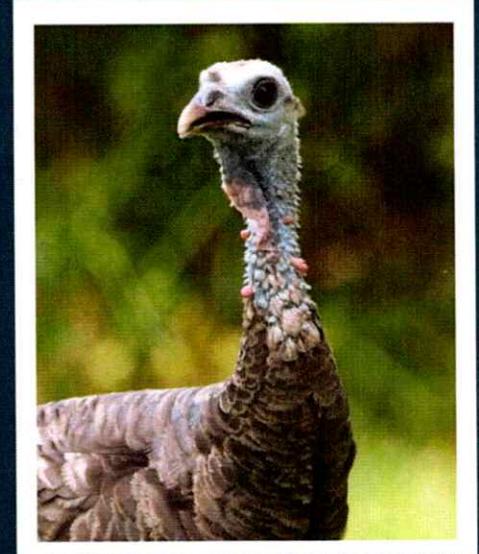
NEW TEST OFFERED: AVIAN METAPNEUMOVIRUS BY TIFFANY TOLBERT, DVM

Avian metapneumovirus, also known as turkey rhinotracheitis and swollen head syndrome in chickens, causes a highly contagious upper respiratory infection in turkeys, chickens, and ducks. Avian metapneumovirus (aMPV)* [EL1] is a single stranded RNA virus in the Paramyxoviridae family and consists of four subtypes: A, B, C, and D. The disease is found globally with only Oceania reporting aMPV-free status. It is of most concern in chickens and turkeys because the virus can lead to significant loss within the poultry industry, especially when accompanied by secondary pathogens. It is difficult to isolate and, as of 2024, only subtypes A, B, and C have been found in the United States. Prior to 2023, subtype C was the only one identified within the United States. We have identified aMPV subtype A in Utah.

In turkeys, the disease typically presents at 3 to 12 weeks of age. Clinical signs include cough, sinusitis, conjunctivitis, ocular discharge, decreased egg production, poor shell quality, and increased egg yolk peritonitis. Secondary pathogens typically seen with this species include *Escherichia coli* and *Ornithobacterium rhinotracheale*. Avian metapneumovirus infections can have up to a 30% mortality rate in turkeys.

In chickens, the disease typically presents between 4 to 6 weeks of age. Clinical signs include mild respiratory signs, sinusitis, ocular discharge, and a drop in egg production for egg layers and breeders. Secondary infections with *E. coli* can lead to worsening clinical signs as well as swollen head syndrome. Swollen head syndrome is characterized by periorbital and facial swelling, swelling of the infraorbital sinuses, respiratory signs, lethargy, and over extension of the neck. Mortality due to aMPV in chickens typically does not reach above 2%.

The virus is only shed for a short period of time so sampling when clinical signs are minimal, or in poultry that have been exposed with no clinical signs, is crucial. Once a bird looks ill, typically it is too late to sample. Ideal samples are swabs from eyes, sinuses, choanal cleft, and trachea, or blood samples. Once samples are collected, testing options for aMPV include PCR, ELISA, virus neutralization, immunofluorescence tests, and immunodiffusion tests. Early detection is key in helping minimize spread of the pathogen, which is why the Utah Veterinary Diagnostic Lab is now offering avian metapneumovirus ELISA and PCR testing. The sample type differs depending on the test chosen. For ELISA testing, serum samples are needed. If PCR testing is warranted, it is recommended to take a swab of one of the previously noted samples using a polyester-tipped applicator with a plastic shaft, making sure to avoid cotton tip swabs with wooden shafts. Once the sample is collected, store it in a viral transport media or brain heart infusion broth (BHI). If there are additional questions about sampling, turnaround time or pricing, please contact the lab for further information. For questions about the ELISA test, please contact the Spanish Fork lab (801-798-5435). For questions about the PCR test, please contact the Logan lab (435-797-1895). You can also find information on the website: www.usu.edu/uvdl



References:

1. Jose Linares, DVM, DACPV, DACAW. Avian Metapneumovirus. 2.USDA APHIS. Avian Metapneumovirus Update. Animal and Plant Health Inspection Service. 2024. Accessed June 6, 2025. <https://www.aphis.usda.gov/news/program-update/avian-metapneumovirus-update>. 3. World Organization for Animal Health. WOAHP Terrestrial Manual. World Organization for Animal Health; 2022.

Footnotes:

*Although similar in name, aMPV is separate from AMPV, which is avian paramyxovirus (such as Newcastle disease, AMPV-1)

EMPLOYEE SPOTLIGHT



KENNA KRONE

Kenna Krone is a lab technician at Spanish Fork. She got a degree in Environmental Science at Carthage College in Kenosha in order to get a job in public health, and has finally achieved that goal by joining the Spanish Fork team in early 2024. Her previous roles have primarily been in the (human) medical device industry, and she enjoys birding on the weekends... but not enough to get up at the crack of dawn for it more than every once in a while.

Eastyn Nyman is our newest Histology Lab Technician. She is 19 years old and has lived in Cache Valley her whole life. She is currently a sophomore at Utah State University, working toward her goal of becoming a veterinarian. She has always been passionate about helping animals and is grateful for opportunities that help her learn and grow in that field. Outside of work, She loves spending time outdoors, whether it's hunting, riding horses, camping, or traveling to new places. She also enjoys quality time with her friends and family!



EASTYN NYMAN