UCDAVIS VETERINARY MEDICINE
California Animal Health and Food Safety Laboratory System

CAHFS CONNECTION

LEADING DIAGNOSTICS NATIONALLY, PROTECTING CALIFORNIA LOCALLY • OCTOBER, 2020

Inside this issue:

Bovine

Pine needle ingestion was a probable contributing cause of **late-term abortion and weak calves** in a beef herd with 60-70 pregnant cows, of which 13 aborted 3 weeks before their due date, over a 3-day period. The three fetuses submitted had aspiration of meconium and epithelial cells into the lung, compatible with in utero hypoxia and stress. In addition, two of the fetuses had edema in the neck, suggestive of prolonged parturition and dystocia. Pine needles contain isocupressic acid which causes poor uterine motility, prolonging delivery and constriction of vessels in the caruncle leading to fetal hypoxia. Fetal thoracic fluid from all three fetuses contained 1458-1646 ppb of THAA, a marker for pine needle ingestion. However, none of the cows retained the placenta, a common finding with pine needle abortions. Two of the fetuses had low tissue selenium, a finding compatible with selenium deficiency (0.12 and 0.21ppm, normal 0.25-0.5ppm).

***Clostridium haemolyticum* (also known as *Clostridium novyii* type D)**, the agent of bacillary hemoglobinuria, caused hepatic necrosis and death in 10 pregnant dairy heifers on pasture over a few days period. The history indicated that the heifers had blood in feces and urine before dying. A dead, 4.5-month pregnant heifer submitted for necropsy, had icterus, an enlarged spleen and two, firm, 8-10 cm mottled areas in the liver. Serosal hemorrhages were observed on the serosa of the forestomachs and the jejunum. Liquid blood and blood clots were present in the colon and rectum. Histology revealed massive hepatic necrosis. The liver was positive for *C. novyii* by fluorescent antibody test. *C. haemolyticum* was detected by PCR in the liver. The heifer was also severely copper deficient (3.7ppm, normal 25-100ppm).

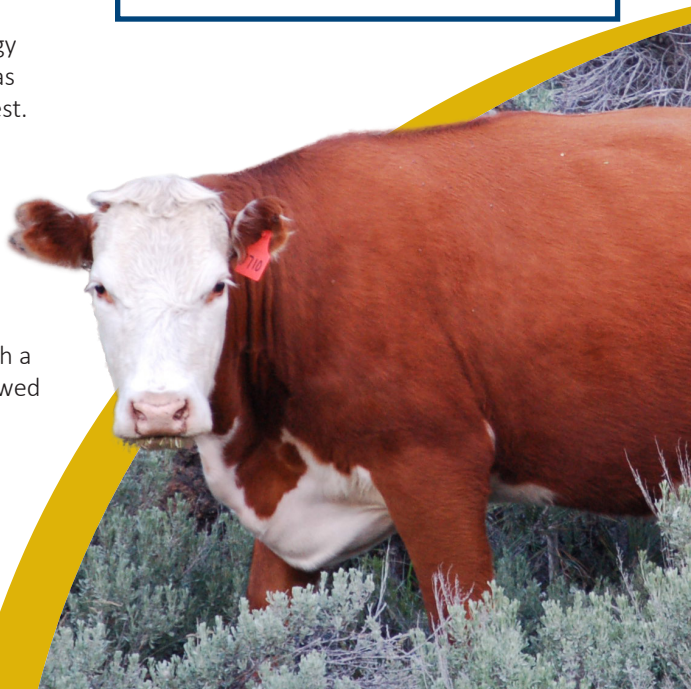
Horse

A **ruptured chronic renal abscess** led to peritonitis in a 25-year-old Quarter horse mare with a 3-day history of anorexia and depression, followed by a spike in temperature and shock. On gross exam, the right kidney was markedly enlarged with replacement of the cranial pole by an abscess. The dilated renal pelvis contained purulent material and there was segmental necrosis of the right ureter. The necrotic omentum was adhered to the ruptured kidney. *E. coli* and *Streptococcus* sp. were isolated from the abscess and *E. coli* from the omentum. Histopathology revealed chronic abscessation and pyelonephritis with ascending tracts into the cortex.

Clostridioides difficile* enterotyphlitis** was diagnosed in an 18-year-old Mustang gelding that was euthanized after a 2-day history of colic. Grossly, the cecum was markedly distended by gas and watery content and the apex was displaced cranially. The apical two thirds of the cecal mucosa were dark-red, and there was a sharp line of demarcation between this area and the normal-colored mucosa. There were serosal hemorrhages in a segment of duodenum and proximal jejunum. Histologically, there were hemorrhages and congestion in the lamina propria of cecum and small intestine with occasional neutrophils. ***Clostridioides difficile toxins A/B were detected by ELISA in the cecal contents. This microorganism was isolated from the small intestine.

Submissions to CAHFS labs during fire season

Please be aware that when the air quality index is higher than 200 in the local area, laboratories will be open but some activities might be temporarily affected.



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Lab Locations:

CAHFS – Davis

University of California
620 West Health Sciences Dr.
Davis, CA 95616
Phone: 530-752-8700
Fax: 530-752-6253
daviscahfs@ucdavis.edu

CAHFS – San Bernardino

105 W. Central Ave.
San Bernardino, CA 92408
Phone: 909-383-4287
Fax: 909-884-5980
sanbernardinocahfs@ucdavis.edu

CAHFS – Tulare

18760 Road 112
Tulare, CA 93274
Phone: 559-688-7543
Fax: 559-688-2985
tularecahfs@ucdavis.edu

CAHFS – Turlock

1550 N. Soderquist Road
Turlock, CA 95381
Phone: 209-634-5837
Fax: 209-667-4261
turlockcahfs@ucdavis.edu

Small Ruminant/Camelid

Verminous pneumonia and parasitic bronchitis were found in a flock of Icelandic sheep who had a history of mucopurulent discharge and coughing unresponsive to multiple antibiotics and pour-on dewormers. Large numbers of nematodes were found within the lower airways and surrounding parenchyma. Several nematodes are implicated in small ruminant lung infections, including *Dictyocaulus filaria*, *Protostrongylus rufescens*, and *Mullerius capillaris*.

White muscle disease due to selenium deficiency was the cause of death in a 5-week-old Dorper lamb with a history of weakness prior to death. The lamb was on pasture with the dam, as part of a group of 35 animals, of which five lambs had died. At necropsy, there was chalky white streaking in skeletal muscles along the dorsal neck, diaphragm and rear legs. The entire inner surface of the left atrium and ventricle was pale tan to white. Histology revealed extensive muscle degeneration and mineralization in affected areas. The liver selenium was 0.04ppm (normal 0.25-0.50ppm).

Wildlife

Cerebral *Frenkelia* spp. infection was the cause of seizures and death in a desert cottontail rabbit. Numerous large cysts were detected in the brain, and multifocally extensive hepatic necrosis and pulmonary vascular thrombosis were also evident on microscopic examination of tissues. *Frenkelia* spp. is a protozoal parasite in the phylum Apicomplexa. Birds of prey are the definitive host; the protozoa infects the intestine and oocysts are shed in feces and ingested by rodents. The parasite then invades the intestinal wall, goes to the liver where schizogony takes place, and then the parasite travels to the nervous system. The cycle continues when the rodent is ingested by birds of prey. The hepatic necrosis is likely associated with this protozoal infection, though none were seen in the liver. Infection of this parasite in rabbits has not been described before.

Pig

H3N2 swine influenza with interstitial **pneumonia** was diagnosed in a 3-month-old Chester white gilt that within 12 hours of arrival from the Midwest exhibited cough and increased respiratory effort. The pig died within hours of disease onset, despite treatment with antibiotics and anti-inflammatory drugs. On gross examination, the lungs were uniformly dark red and moderately edematous with prominent interlobular septal edema. Microscopically there were fibrinous alveolitis and thrombi with some neutrophils. H3N2 swine influenza virus was detected by PCR. A secondary bacterial infection was suspected but no pathogenic bacteria were isolated from the lung.

Lawsonia intracellularis* and *Salmonella agona were the cause of diarrhea and weight loss in two, 4-month-old Yorkshire cross gilts. On necropsy, the small intestine, cecum and spiral colon had roughened and slightly thickened mucosal surfaces with thin orange-tan content. Histopathology revealed lesions compatible with both *Lawsonia* spp. (cause of proliferative ileitis) and *Salmonella* spp. in the small intestine, cecum and colon. *Lawsonia* spp. infection was confirmed by the presence of typical intracellular bacteria seen on silver stain.

Poultry and Other Avian

Histomoniasis (Blackhead) was the cause of death of 9-week-old meat turkeys experiencing 75 deaths/day for two days in a house of 1,100 birds. Typical targetoid liver lesions and thickened and necrotic ceca were seen at necropsy. Histopathology revealed lesions compatible with histomoniasis in the liver and ceca.