

# 2019 Western Conference of Veterinary Diagnostic Pathologists

## **Diseases of the Alimentary Tract in Domestic Animals**

### **- - Case Introductions - -**

Moderator: Dr. Francisco A. Uzal  
School of Veterinary Medicine, University of California,  
Davis and San Bernardino's Branch Chief of the California  
Animal Health & Food Safety Lab

**October 4 and 5, 2019**  
Holiday Inn Express & Suites Saskatoon East  
Saskatoon, SK

**Case #1 (BO-04815-19) - Brenda Bryan and Vasyl Shpyrka, Manitoba Agriculture, Veterinary Diagnostic Services Laboratory.**

Four Red Angus cows were presented for slaughter at local abattoir. One of them had a firm immovable lump on its ventral mandible, its body condition were from thin to fair. At post mortem inspection multiple nodules were present in the lungs of affected animal. Mandible and lungs were submitted to the diagnostic lab, rest of the carcass was held.

**Case #2 (17-1931) – Laura White, Washington Animal Disease Diagnostic lab, Washington State University.**

A 10 year old FS Golden Retriever presented with a 3 cm in diameter non-painful, firm and freely moveable mass in the right submandibular region. The mass was initially evaluated via needle biopsy with a diagnosis of presumptive squamous cell carcinoma. The entire mass was then removed and submitted.

**Case #3 (19-08154) – Erin Zachar, Prairie Diagnostic Services, and Ajaypal Kahlon, WCVM.**

A 22Kg, 6 year old, sexually intact, adult female, black and tan German Shepherd dog with current vaccinations, deworming and no travel history. The dog was received for necropsy in a chilled, fresh state of post mortem preservation, with minimal autolytic changes and thin nutritional condition (BCS = 1.5/5). Red-brown fluid was passively draining from the nostrils and mouth. The esophagus was markedly enlarged from approximately 2cm distal to the epiglottis, to the diaphragm. The diameter of the esophagus ranged from 3.5cm to 5cm, with an approximately 10cm x 10cm x 8cm ventral out-pouching just cranial to the thoracic inlet. The intra-thoracic segment of the esophagus was diffusely distended, with an approximate diameter of 17cm at the widest point. The serosal surface of the esophagus was congested, roughened and red on the lateral and dorsal walls, and in ventral areas, the mucosa was thickened, edematous, and often covered by a fibrinonecrotic membrane. The esophageal lumen was filled with liquid tan to brown fluid with multifocal globules of yellow-brown mucus, flecks of white material (rice or finely grated potato?), and small chunks of food (green beans, carrots). The cranioventral areas of the lung were diffusely dark red to purple, thickened and firm, with multifocal miliary to approximately 0.5cm white spots on the serosal surface and within the parenchyma on cut section. The right caudoventral lung lobe was diffusely atelectatic (areas of lung adjacent to distended esophagus, diaphragm and cardia). The cardia, stomach and small intestine were grossly normal. The uterine horns were bilaterally mildly distended by clear, slightly mucousy liquid, and there were multifocal to coalescing small cysts throughout the entire endometrial surface (cystic endometrial hyperplasia). There were no other pathological abnormalities found on gross post mortem examination.

**Case #4 (Cytology Case) – Donal O’Toole, Wyoming State Veterinary Laboratory, University of Wyoming.**

A 20 year old, well-cared-for American Quarter horse gelding developed abrupt onset depression, labored breathing, increased heart rate (60/min), and tachypnea (48/min). He was afebrile. He had been on feed for senior horses. His teeth were floated recently. The clinician drew fluid she assumed was blood from one jugular furrow. She was puzzled by its brown, turbid appearance. In-clinic cytology revealed erythrocytes and an abundant polymicrobial

bacterial population. The fluid was submitted to the WSVL for analysis. The treating clinician noted on the accession form that the horse was “kind of thin” and the gloomy statement that he was “not dead yet”.

After cytology findings were reported from the WSVL, the clinician euthanized the horse and submitted the carcass for necropsy the same day. Principal findings at necropsy were moderate acute bilateral anteroventral aspiration pneumonia, secondary to a 25 cm feed impaction immediately anterior to cardiac sphincter, and apical necrosis with incipient tooth loss of left 1st maxillary molar tooth. The two major lesions were presumably related. The cytology preparation was inadvertently drawn from distended esophagus.

**Case #5 (15-050596) – Maria Spinato, Animal Health Laboratory, University of Guelph, and Veronique S. Dufour, WCVM.**

A 6-year-old female reindeer called Olive presented to the veterinarian with a history of weight loss over several months and a 2 week bout of diarrhea progressing to lethargy and anorexia the last 3 days. She was treated with a steroid, antibiotic, oral electrolytes, kaopectate and Panomec horse dewormer, but subsequently died and was submitted to the AHL for postmortem examination. Three other reindeers had died on this farm over the past 3 years with similar clinical signs. The remaining animals appeared healthy.

At postmortem examination, the reindeer was thin and moderately dehydrated with sunken eyes. There was moderate dental disease typified by uneven wear of molars with some sharp edges noted, in addition to slight wave formation. The rumen contained a 2 kg bundle of cloth admixed with feed and several clumps of hard brown material. Abomasum was empty and mucosa was markedly thickened and had a red-brown, granular to leathery surface. Small and large intestines were relatively empty. Liver was dark brown with sharp borders. There was mild hydropericardium.

**Case #6 (18-25991) – Erin Zachar, Prairie Diagnostic Services Inc., and Divya Jose, WCVM.**

An 18 month old, male bearded dragon with one-month history of not eating and doing poorly. Blood work showed high glucose, increased leukocyte count and bacteremia. At necropsy, the animal was 50.5cm from nose to tail (consistent with a sexually mature, adult over 1 year of age), and was submitted in a chilled state of post mortem preservation, with good nutritional condition (BCS = 3/5). There was an approximately 2.3cm x 1.5cm x 1.5cm, firm, white to tan, nodular mass in the anterior stomach, approximately 2cm distal to the heart. On cut section, the mass was multilobular, firm, and white. There were multifocal, similar, white, firm masses throughout the liver, ranging from miliary to approximately 0.5cm diameter. There were similar, multifocal white masses within the kidneys, and adhered to celomic surface and on the left abdominal fat pad. There were no other pathological abnormalities found on gross post mortem examination.

**Case #7 (18-2934-16) – Dale Miskimins, South Dakota State University.**

A number of young adult mink were submitted after brief episodes of diarrhea, anorexia, lethargy and death. Necropsy examinations often revealed gastric hemorrhage and scant blood-tinged intestinal contents. The livers were sometimes paler in appearance than normal.

**Case #8 (19-2051 30-3) – Kelly Ramsay, Washington Animal Disease Diagnostic lab, Washington State University.**

Two 3 month-old Yorkshire pigs from a herd of 40 died after one to two days of bloody diarrhea. One pig was submitted for necropsy. On gross examination, the ileum was diffusely, severely and transmurally thickened with a prominent cerebriform pattern of projections and depressions. The ileal mucosa was diffusely hyperplastic, and the lumen filled with blood clots.

**Case #9 (17-10887 5-5) – Rachel M. Bone, Washington Animal Disease Diagnostic lab, Washington State University.**

An 11 week old, female Yorkshire puppy with an initial limited history of sinus infection, and antibiotic administration was found dead by the owner and submitted for necropsy. Gross findings were limited and included diffuse transmural thickening of the jejunal wall and dark pink mottling of all lung lobes, with increased firmness. Personal communication with the submitter after necropsy revealed that this puppy had previous bouts of diarrhea and additional puppies in the litter had diarrhea at the time of death of this puppy.

**Case #10 (15-046425) - Maria Spinato, Animal Health Laboratory, University of Guelph, and Pini Zvionow, WCVM.**

A 4-year-old female Bernese Mountain dog presented to the referring veterinarian with dilated intestines and suspected foreign body obstruction or pyometra. An exploratory laparotomy was performed and intestines were noted to be grossly dilated with air and liquid fecal matter. Two formalin-fixed full-thickness small intestinal biopsies and a biopsy of mesenteric lymph node were submitted to the AHL for histopathologic examination.

**Case #11 (17-094301) - Maria Spinato, Animal Health Laboratory, University of Guelph.**

A 2-year-old Boer doe in late pregnancy developed diarrhea, became recumbent and died. The veterinarian performed an on-farm postmortem and noted diarrhea and dehydration externally. Internally, the mesenteric lymph nodes were markedly enlarged, and scant pasty ingesta was present in the colon. A tentative diagnosis of Johne's disease was made, and formalin-fixed and fresh tissues were submitted to the AHL for diagnostic testing.

**Case #12 (15-019828 B-6) - Maria Spinato, Animal Health Laboratory, University of Guelph.**

A herd of approximately 420 Saanen dairy goats was experiencing diarrhea in 10-day-old nursery kids. Two kids were submitted to the AHL for full enteric work-up. Postmortem findings included dehydration, thin body condition and depleted internal fat stores. Small intestine were regionally filled with clear fluid and were minimally congested. Mesenteric lymph nodes were slightly enlarged. Large intestines contained semi-fluid to pasty yellow ingesta. Other viscera, joints and brains were unremarkable grossly.

**Case #13 (94-4801) Tara Funk, WCVM.**

A 5-month-old, male Hereford X calf was euthanized and submitted for post-mortem examination, following a history of depression, inappetence and joint swelling, with further deterioration to lateral recumbency. Upon gross examination, many joints, involving all four legs, were markedly swollen and contained large amounts of fibrin. In the distal duodenum and

jejunum, a small number of randomly distributed, well-delimited, raised, plaque-like lesions were identified on the mucosal surface. These areas were dull, red to brown and the surrounding intestinal mucosa was occasionally eroded or erythematous. Multiple irregular, dull, greenish foci were scattered throughout the myocardium, and the left ventricular papillary muscle was most severely affected. A scant number of small, hemorrhagic foci were present within the brain parenchyma.

**Case #14 (17-34191) – Roman Koziy and Enrique Aburto, WCVN.**

A 2-week-old, Holstein Friesian calf sick since 3 days of age; got progressively depressed and febrile (104F rectal T) despite treatment. This calf was euthanized, had loose stools but not fluid diarrhea. On gross examination, the calf was in fair body condition with normal muscle mass and moderate body fat stores. The eye globes were moderately sunken (dehydration). Moderate amounts of yellow-brown fluid feces stained the fur around the perineum, tail, and hocks. The lungs were diffusely wet, heavy, and non-collapsed with cranioventral areas of red discoloration and consolidation. The intestinal tract was flaccid, and distended with abundant tan watery fluid.

**Case #15 (19-08436) – Michael Zabrodski and Helene Philibert, WCVN.**

Fixed and fresh sections of intestines from a calf of unknown age. Herd has scours outbreak in newborn calves.

**Case #16 (19-15816-3) – Christiane Loehr, Oregon State University.**

A koi was found dead in its exhibit (outdoor pond) after a short period of showing exophthalmia, a swollen abdomen and buoyancy issues. On necropsy, the female, 11kg koi was in fair postmortem condition. The body / coelomic cavity was markedly expanded; the vent was very swollen and bright red. Multifocally, scales were elevated by edema and discolored dark grey (hemorrhage). Both eyes severely protruded from the sockets (exophthalmia) and had disseminated petechiation throughout the sclera. The gills were pale and filaments appeared swollen. The kidney and heart were covered with thick layers of white, soft material; the kidney was also severely enlarged and had numerous white nodules up to 5mm in diameter. The lumen of the digestive tract (stomach and intestine) contained mucoid red fluid and the mucosa was bright red and edematous. The spleen appeared enlarged, the liver uniformly tan. The swim bladder was within normal limits.

**Case #17 (19-15107-4) – William O’Neill and Christiane Loehr, Oregon State Veterinary Diagnostic Laboratory, Oregon State University.**

Four approximately 5-week-old Ring-necked pheasants (*Phasianus colchicus*) were necropsied after the producer noticed a gradual increase in mortality rates. The submitter stated that the animals were raised in a single barn that had been having issues with rats, and that ducks were also raised in the area. Two of the four birds were thin and postmortem autolysis was mild to moderate. All four birds had dilated ceca and duodena containing green to dark brown, pasty material within the lumens.

**Case #18 (19-15236-4) - William O'Neill and Christiane Loehr, Oregon State Veterinary Diagnostic Laboratory, Oregon State University.**

Fifteen five-day-old Ring-necked pheasant (*Phasianus colchicus*) chicks were necropsied after an increase in baseline mortality rates was noted. Total flock size was not noted, but 10-15 birds were dying per day. Gross findings included mild to severe autolysis, dark red lungs in one bird, and a segment of dark brown, dilated small intestine in another bird.

**Case #19 (EEHV-ht-om) - William O'Neill and Christiane Loehr, Oregon State Veterinary Diagnostic Laboratory, Oregon State University.**

A female, juvenile Asian elephant (*Elaphas maximus*) within an AZA-accredited facility tested positive for endotheliotropic herpesvirus (EEHV) activity during routine monitoring through the Smithsonian's National Elephant Herpesvirus Laboratory. Shortly thereafter, the animal became lethargic and anorexic. Despite aggressive treatment with fluids, anti-virals, and transfusion therapy, the elephant passed away. At necropsy, there were multifocal areas of hemorrhage throughout most tissues, including the oral cavity and intestinal tract. The lesions were most prevalent in the heart and highly vascular organs.

**Case #20 (18-19638) – Ivanna Kozii and Enrique Aburto, WCVN.**

Porcine farm, 320 sow F-F, PRRS/Mycoplasma hyopneumoniae positive. Wasting grower pigs. One of the affected pigs had enlarged thickened ileum on necropsy. Fixed tissue samples and swabs were submitted for histopathology and bacterial culture, respectively.

**Case #21 (19-19219) – Maodong Zhang and Ryan Dickinson, WCVN.**

Multiple red, raised nodules distributed along the serosal surface of the normal and nonviable jejunum and were identified in a 24-year-old neutered male horse for removing the strangulating lipoma around the jejunum.

**Case #22 (19-6963 8-4) – Chrissy Eckstrand, Washington State University.**

Jersey dairy calf, <28 days old from southern Idaho. Presented dead after history of diarrhea and poor body condition. At gross necropsy there were cecal ulcers and a fibrinonecrotic mucosal membrane that was also observed in the colon.

**Case #23 (PC-5336-19) – Brenda Bryan and Vasyi Shpyrka, Manitoba Agriculture, Veterinary Diagnostic Services Laboratory.**

A load of 26 hogs was delivered for slaughter. At ante mortem inspection 3 out of 26 hogs appeared to have distended abdomen and fair body condition. All three hogs were marked as suspected and segregated in a separate pen. One was killed on the day of delivery and condemned on a post mortem inspection for enteritis by the inspector in charge. Two others were humanely euthanized the morning of the following day and delivered promptly to the provincial diagnostic laboratory for necropsy and further investigation. GROSS EXAMINATION: Female weighing 65kg. Body condition score was 3 of 5 (Body condition score handbook, saskatchewan.ca/livestock, Government of Saskatchewan) where firm pressure with the palm is needed to feel the hip bones and back bone, pelvic bones, ribs can be felt but with pressure and spine was covered and rounded. The face was slightly thin. Abdomen was moderately

distended. There was pasty tan stool at the anus. Lungs were diffusely dark pink, soft, rubbery with caudal lobe rib impression. The heart was unremarkable. In the abdomen, the spiral colon was dilated approximately 2-4 fold and was filled with large volume of creamy tan feces proximally and pasty tan feces distally. The descending colon was dilated approximately 5 fold and filled with creamy tan feces. The descending colon formed a funnel shape approximately 5-6cm long and colonic wall of 5-6mm thick. At the level of the pelvic inlet, the descending colon and proximal rectum for a distance of approximately 4.5cm was strictured with a diameter of approximately 1.5cm. The distal rectum and anal opening diameter was approximately 7mm. On longitudinal cut section of the affected colon and rectum, the mucosa was proximally tan and shiny. There was a sharp ridge of rounded to scalloped demarcation between the dilated smooth grey to tan distal colonic mucosa and the creamy shiny smooth colonic mucosa at the pelvic inlet which merged into the strictured smooth mucosa of the pelvic colon and proximal rectum. The distal rectum and anus had red mucosa with rugae. Longitudinally split femur bone marrow was pink and greasy.

**Case #24 (18-11157) – Ursula Perdrizet and Enrique Aburto, WCVM.**

A 10-year-old, male, Labrador retriever with episodes of fresh blood on normal consistency feces. A rectal polyp was found on clinical exam. The polyp was excised and submitted for histological assessment. The mass measured 1.3 x 0.8 x 1.1 cm.

**Case #25 (19-17281) - Colby Klein, Igor Medici de Mattos, Juliana Sartori Lunardi, Ivanna Kozii, Sarah Wood, Elemir Simko, WCVM.**

European honeybee hives were unwrapped and inspected in early May. One hive displayed marked fecal staining at the entrances and was notably weaker. Returning forager workers were collected and fixed in formalin. Several bees were dissected and had their abdominal contents examined histologically.

**Case #26 (Bee larvae) – Sarah Wood, Elemir Simko, WCVM.**

A commercial beekeeper has noticed numerous weak colonies this spring shortly after the first honey flow. Affected colonies have a 'shotgun' brood pattern with numerous dead, discolored larvae. The beekeeper discontinued oxytetracycline metaphylaxis two years ago.

**Case #27 (19-11243-1/2/8/9) – Shelagh Copeland, Prairie Diagnostic Services Inc., and Ashish Gupta, WCVM.**

Fifteen-year-old female bison did poorly most of the winter and had very loose stools. It was on pasture with rest of herd, feeding hay and bison mineral block. Other younger animals have had diarrhea with no confirmed cause. Animal euthanized that morning and submitted for a post mortem. On post mortem, the animal was thin with pale mucus membranes and moderate accumulation of perineal dried fecal material. The small amounts of fat were yellow tinged. The esophagus had multifocal shallow linear erosions to possible ulcers. The liver had sharp borders. The rumen and abomasum were moderately full of most green forage; pH of abomasal fluid was 6 at ~ 3 hours after euthanasia. The mucosa of the lower abomasum was moderately thickened with a slight cobblestone appearance and marked ulceration of torus. Mesenteric lymph nodes had mild to moderately thickened irregular pale tan cortices, which were most

marked in the ileocolic. The small intestinal mucosa from ~mid length posteriorly appeared slightly thickened which was most marked ~ 30 cm from the junction with colon/cecum. The anterior colon also appeared mildly thickened. The digesta remained fluid in the colon with no formed fecal material.

**Case #28 (19-24803-9+10) – Shelagh Copeland, Prairie Diagnostic Services Inc., and Javier Barrera, WCVM.**

Three-year-old purebred Charolais bull was put out onto pasture July 11 and found down the next morning bleeding from the rectum. Bull was able to rise, be loaded and transported to the veterinary clinic. On examination, the bull had tachycardia, distended abdomen with no pings, and a large rectal blood clot. On blood analysis, bull was alkalotic, hypochloremic, anemic and hyperlactatemic. Intestinal structures were thickened on ultrasound. The animal was euthanized due to grave prognosis and submitted immediately for a post mortem. On post mortem, the bull was in very good body condition with a severely distended rumen and abomasum by green fluid and digesta. The anterior jejunum had an area of marked reddening and thickening ~ 90 cm in length with fairly distinct borders and moderate accumulation of fibrin on serosa. The anterior edge was lightly telescoped into the adjacent intestine, which was easily reduced. The affected section contained large lightly adhered blood clots overlying a much-reddened mucosal surface. Anterior to the affected segment the small intestine had a small amount of blood and ~ four ulcers lightly rimmed by friable tissue with largest ~ 3.5 x 3 cm in diameter. Posteriorly the intestines appeared relatively normal but blood filled along its length with tarry changes in colon.

**Case #29 (19-25601-1) – Shelagh Copeland, Prairie Diagnostic Services Inc., and Meghan Baker, WCVM.**

Sudden death of bovine calves out on pasture in July with one very ill. One calf had pericarditis with black tissue/muscle and foul smell. The other calf had black area in muscle with gas. Fixed and fresh tissue submitted.

**Case #30 (19-25601-1) – Gwen Roy and Trent Bollinger, WCVM.**

A weak, emaciated adult red-tailed hawk was submitted for rehabilitation at the WCVM in December 2018. On presentation it had no musculoskeletal reason evident for emaciation. The bird was euthanized approximately one month after admission due to increased respiratory effort of several days duration. The bird was frozen and submitted for necropsy. On gross necropsy there were multiple large granulomas within multiple tissues (lung, spleen, bone etc.).

**Case #31 (19B-2865-92) – Donal O'Toole, Wyoming State Veterinary Laboratory, University of Wyoming.**

A largely bald full-term Red Angus-Simmental bull calf with no erupted teeth was born full-term to a first-calf heifer on a ranch in Nebraska in late winter 2019. Three similarly affected calves were born into the herd over the previous 6 years. Skin samples from one were examined histologically to confirm absence of primary (guard) hairs. The 2019 calf was also largely devoid of primary (guard) hairs apart from skin at the distal aspects of limbs, concave aspect of pinnae, eyelids, and muzzle. The calf was kept alive with an insulating wrap in a heated barn to pre-empt



pneumonia until euthanasia at 10 days postpartum. There were no clinical signs or lesions of pneumonia, unlike other hypotrichotic calves born previously. The calf was alert, and ambulated and nursed normally. No incisors were detected radiographically or grossly. Dysplastic unerupted cheek teeth were however present. The slide is of portions of a cheek tooth.

**Case #32 (No histology slide) - Delaney Schofer, WCVN, and Chelsea Himsworth Animal Health Centre, BC Ministry of Agriculture.**

This warmblood mare (15 years old) produced a stillborn foal in the spring of 2018, resulting in dystocia and a large rectal/small colon prolapse, which was treated medically. Subsequently the mare had multiple episodes of small colon impaction which lead to euthanasia in June 2019. On gross examination the mare was in excellent body condition with good muscling and fat stores. There was a ~ 6' long, severe impaction of the small colon which originated from an area of stricture that was ~ 2' proximal to the anal orifice. At the area of stricture, the colonic lumen was narrowed to < 1/4 of its normal diameter. There was a prominent, red, fibrous band in the mucosa of the stricture site that was oriented perpendicularly to the long axis of the colon and extended circumferentially around the affected area. The corresponding serosa and mesocolon were fibrotic and deformed. There were no other significant findings.

**Case #33 (No histology slide) – Carolyn Legge, UCVN.**

A 7-year-old, male-castrated, Border collie presented for a prolonged (> 12 day) history of weight loss with periodic vomiting and diarrhea. Clinical exam findings included 10% dehydration, generalized muscle atrophy, and a mild systolic murmur. Diagnostic imaging revealed a gas distended small intestine with lack of motility. Exploratory laparotomy (EL) revealed an absence of borborygmi and severe ileus in the small and large intestine. Surgical biopsy samples of liver, stomach and jejunum were collected during the EL, but were not submitted for histopathology. Five days following EL, the patient decompensated and died. Postmortem examination revealed evidence of a diffusely dilated and flaccid gastrointestinal tract with fibrinous adhesions noted around the gastrotomy and enterotomy sites.