Regional Veterinary Laboratories Report

January 2023

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 410 carcases and 455 foetuses during January 2023. Additionally, 1,865 diagnostic samples were tested to assist private veterinary practitioners with the diagnosis and control of disease in food-producing animals. This report describes a selection of cases investigated by the Department of Agriculture, Food and the Marine's (DAFM) veterinary laboratories in January 2023.
The objective of this report is to provide feedback to veterinary practitioners on the pattern of disease syndromes at this time of the year by describing common and highlighting unusual cases. Moreover, we aim to assist with future diagnoses, encourage thorough investigations of clinical cases, highlight available laboratory diagnostic tools and provide a better context for practitioners when interpreting laboratory reports.

CATTLE

Pneumonia and enteritis were the most common diagnoses at necropsy in cattle in the RVLs during January 2023.

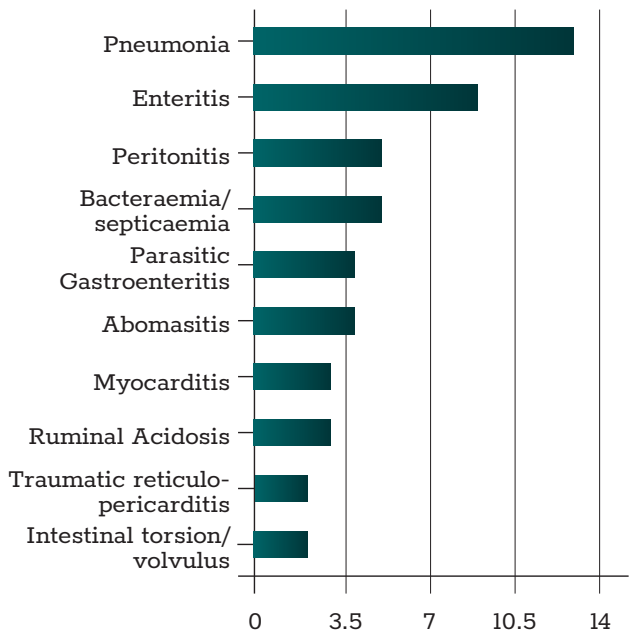

Table 1: The most common diagnoses in cattle submitted for necropsy in January 2023.

GASTROINTESTINAL TRACT

Abomasitis

The carcase of a one-month-old calf with a history of ante-mortem bloating was presented to Kilkenny RVL. There was extensive sub-cutaneous emphysema, and the sub-cutaneous tissue was hyperaemic. The abomasum was hyperaemic with haemorrhages on the serosal surface. The mucosal surface was emphysematous, and the abomasum contained malodorous contents and an incompletely-clotted milk. There was milk in the forestomachs, indicating that this animal had been a ruminal milk feeder (oesophageal groove dysfunction). A large number of *Sarcina sp.* were seen on histopathology. *Sarcina* are bacteria that proliferate when there is an excess of fermentable carbohydrate within the abomasum, possibly following ingestion of a large volume of milk and associated abomasal distension and stasis. *Sarcina* ferment sugars, producing carbon dioxide, which can prolong tympany, potentially reducing mucosal perfusion and vitality. Other products of fermentation such as acetate, hydrogen and ethanol can cause chemical damage to the mucosa and may reduce the pH, which further slows abomasal emptying. A diagnosis of abomasitis with abomasal bloating was made. The advice below was issued regarding abomasal bloat.

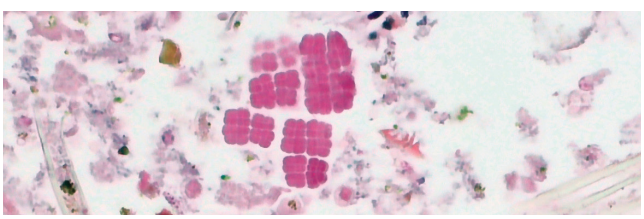

Figure 1: Typical cuboidal colonies of *Sarcina sp.* bacteria in abomasal contents. Photo: Maresa Sheehan.

Abomasal bloat

Contributory factors believed to be associated with the development of abomasal bloat include delayed abomasal transit time, the presence of microbes capable of fermentation and the availability of a readily fermentable substrate. Some of the risk factors believed to delay abomasal emptying, thereby facilitating exuberant fermentation, toxin elaboration and gaseous production, include: feeding either hypo- or hyper-osmolar solutions, large volume feeds (>2.5-3L), incorrect temperatures, erratic feeding schedules, poor water availability and inconsistent mixing of milk replacer solutions. Methodical, regular and effective cleaning protocols for feeding equipment are also of paramount importance.

Ruminal acidosis

Athlone RVL examined a two-year-old heifer with a history of sudden death. It was the first loss experienced in the group. There was a strong acidic smell from the ruminal contents with concentrates and grain visible in the contents. The ruminal wall was hyperaemic, and the intestinal contents and faeces were soft. The rumen pH was 4.0; values < 5.5 are highly suggestive of ruminal acidosis and ruminal pH tends to rise post-mortem. Histopathology of the rumen showed

vacuolation and neutrophil infiltration into the superficial epithelium of the rumen papilla consistent with a chemical rumenitis. A diagnosis of ruminal acidosis was made.

Traumatic reticula-hepatitis

A seven-year-old cow was showing signs of weakness prior to death. She was submitted to Kilkenny RVL having failed to respond to treatment. On necropsy, there were adhesions between the reticulum, liver and the diaphragm. The liver was very autolysed but had fibrin tags on the surface. There were multifocal purulent hepatic abscesses and foci of necrosis. There was a sharp piece of wire, approximately 7cm in length, lodged in the liver at the site of inflammation and necrosis. There were haemorrhages on the spleen and the kidneys. The lungs were congested and oedematous. *Trueperella pyogenes* was cultured from multiple organs. When metal foreign bodies perforate the reticulum, it can go in various different directions. The pericardium can be perforated, causing pericarditis, however sometimes the perforation can occur laterally in the direction of the spleen or medially towards the liver as occurred in this case.

Figure 2: Abscess and wire (centre) in a bovine liver. Photo: Aideen Kennedy.

RESPIRATORY TRACT

Fibrinous pleuropneumonia

A four-year-old cow presented to Kilkenny RVL with a history of acute onset of recumbency and death despite treatment with antimicrobials, shortly after calving. The farmer reported eight more losses in the previous two or three weeks. On post-mortem examination, there was a severe fibrinous pericarditis, pleuritis and bronchopneumonia. There was cranio-ventral consolidation affecting approximately 40 per cent of the lung parenchyma. *Mannheimia haemolytica* was cultured. Vaccination was advised, as well as minimising stress at calving.

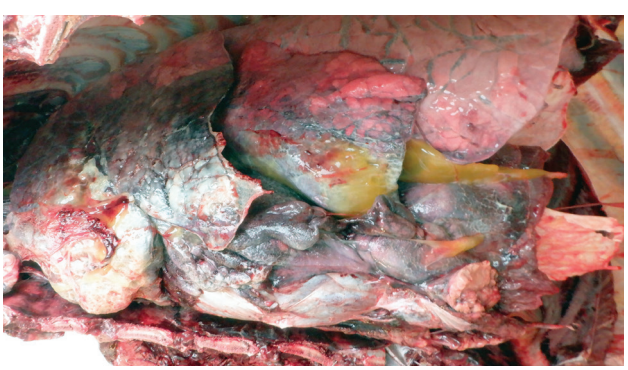

Figure 3: Fibrinous pleuropneumonia due to *Mannheimia haemolytica* in a dairy cow. Photo: Lisa Buckley.

A pregnant dry dairy cow was submitted to Limerick RVL with a history of loss-of-condition and weakness. Necropsy disclosed a severe fibrinous pleuropneumonia and *M. haemolytica* involvement was confirmed upon culture and polymerase chain reaction (PCR) testing. There have been similar reports of acute bacterial pneumonia involving *M. haemolytica* infection in adult dairy cows in the Netherlands and Scotland.

Figure 4: Another case of fibrinous pleuropneumonia due to *Mannheimia haemolytica* in a dairy cow. Photo: Alan Johnson.

Pneumonia with foreign body

A yearling was found recumbent, failed to respond to treatment and was submitted to Kilkenny RVL after it died. On examination, approximately 40 per cent of the lungs were consolidated cranioventrally. There were small abscesses within the consolidated region. Caudally the lungs were "meaty" and there was multifocal ground glass emphysema. There was a thin twig with thorns approx. 9cm in length lodged in the lower bronchus of the right lung. *T. pyogenes* was cultured from the lung and PCR positive results for bovine respiratory syncytial virus (BRSV) and *Mycoplasma bovis* were obtained. While the presence of the foreign body may have contributed to initial irritation, a number of respiratory pathogens were identified, and a review of pneumonia control on the farm was recommended.

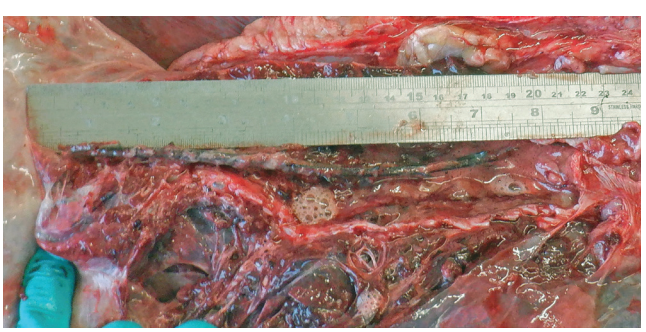

Figure 5: A foreign body discovered in the lower bronchus of a yearling, found to be a twig with thorns. Photo: Aideen Kennedy.

URINARY/REPRODUCTIVE TRACT

Bovine abortions

Sligo RVL diagnosed bovine abortions associated with *Listeria monocytogenes* and *T. pyogenes* infections during January and one case where *Neospora caninum* was involved.

CARDIOVASCULAR SYSTEM

Vegetative endocarditis and cardiac abscessation

Athlone RVL examined an 11-month-old heifer with a history of having shown respiratory signs; she had been found panting and pyrexic one week previously and was treated by the vet, but there was no response to treatment, and she died. There was a very large vegetative endocarditis lesion on the tricuspid valve and much smaller lesions on the mitral valve on the left side. In addition, there were multifocal, well-encapsulated abscesses in the interventricular septum and the ventricular free walls. The liver was enlarged with rounded edges and there was thick inspissated bile in the gall bladder. There was diffuse pulmonary congestion and oedema and right sided anteroventral pulmonary consolidation and subpleural emphysema in the caudodorsal lobes bilaterally. *Staphylococcus aureus* was isolated from the cardiac lesion. Histopathology of the lung was suggestive of a bacteraemia/septicaemia and a conclusion of vegetative endocarditis and cardiac abscessation and bacteraemia was reached.

MUSCULOSKELETAL

Cellulitis

A 15-month-old heifer with a history of lameness prior to death was submitted to Kilkenny RVL. On post-mortem examination, there was a marked area of necrosis and abscessation in the hindlimb musculature, and the muscle was malodorous. There was a severe cellulitis extending from this area cranially to the cervical subcutis, with marked oedema. Clostridial fluorescent antibody techniques (FAT) results were positive and a review of clostridial vaccination was advised, with use of a multivalent vaccine recommended.

Figure 6: Cellulitis extending subcutaneously from the hindlimb musculature. Photo: Aideen Kennedy.

MISCELLANEOUS

Vasculitis and infarction

A two-month-old calf was submitted to Kilkenny RVL with general malaise and failure to respond to treatment. Multifocally throughout the liver, spleen, kidneys, some lymph nodes and the brain there were multifocal haemorrhagic and necrotic foci with occasional pale centres and hyperaemic rings. There was a severe pneumonia and necrotising tracheitis. There were healing ulcers on the tongue and in the interdigital spaces. *Escherichia coli* was isolated from the liver and lungs; this is suggestive of a bacteraemia. Histopathology revealed a diffuse mycotic infection that resulted in multi-organ involvement. A severe, multifocal vasculitis with multifocal infarction/haemorrhage and necrosis was diagnosed. Immunosuppression from previous ongoing disease processes and prolonged antibiotic use have been suggested as possible causes of fungal infections.

Figure 7: Multifocal areas of infarction in the liver, associated with mycotic vasculitis. Photo: Maresa Sheehan.

Omphalophlebitis and peritonitis

A one-month-old calf presented to Kilkenny RVL with a history of sudden death. On post-mortem examination, there was a severe diffuse fibrinous peritonitis. The infection appeared to have originated from the umbilicus which contained pus. A review of umbilical hygiene in the neonatal period was recommended.

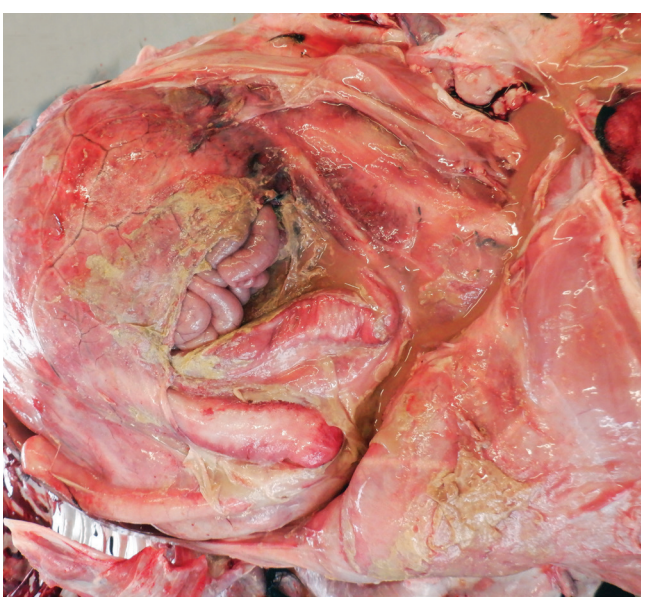

Figure 8: Peritonitis in a calf which developed from an omphalophlebitis. Photo: Lisa Buckley.

SHEEP

Parasitic gastroenteritis and bacteraemia/septicaemia were the most common diagnoses at necropsy in sheep in the RVLs during January 2023.

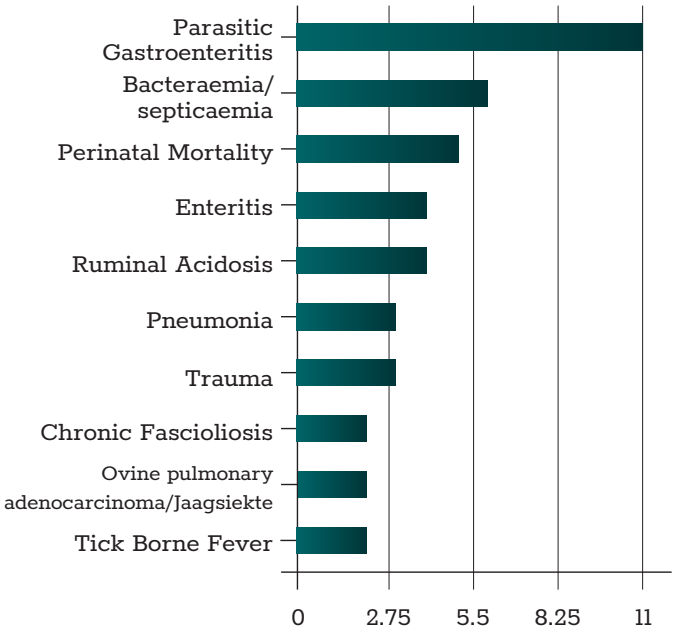

Table 2: The most common diagnoses in sheep submitted for necropsy in January 2023.

GASTROINTESTINAL TRACT

Parasitic gastroenteritis

A nine-month-old lamb was found dead and submitted to Kilkenny RVL. The lamb was in poor body condition. Small numbers of lungworm were visible in the trachea and airways (*Dictyocaulus filaria*). There were focal haemorrhages on the abomasum mucosa. On McMaster's examination, there was an egg count of 1500 eggs per gram (EPG) and a diagnosis of parasitic gastroenteritis was made, with a review of parasite control recommended.

Fasciolosis

Sligo RVL diagnosed deaths in sheep due to acute and chronic fascioliosis in January.

Intestinal atresia

A one-day-old twin lamb was found dead with no prior signs and submitted to Kilkenny RVL. The other twin lamb was healthy. On examination, the lamb was moderately dehydrated with hyperaemic mucous membranes. There was an intestinal atresia, with dilated loops of intestine cranial to the blockage. There was fibrin on the liver. *E. coli* was cultured from multiple organs indicating a bacteraemia. Intestinal atresia is usually considered a sporadic event, although there may be a hereditary aetiology in some dairy calves. An ischaemic event affecting intestinal vasculature during pregnancy is considered to be the most likely explanation for sporadic cases.

Figure 9: Dilated loops of intestine cranial to an atresia in a lamb. Loops distal to the atresia are empty (right). Photo: Aideen Kennedy.

Traumatic pharyngeal injury

Athlone RVL examined a three-year-old ewe with a history of sudden death. It was the third recent loss. The carcase was pale, as were the conjunctiva, liver, and lungs. There was a bolus embedded in the left pharyngeal submucosa and a necrotic reaction in the surrounding soft tissue, and a foul smell. There was a large blood clot in the reticulum. A conclusion of pharyngeal haemorrhage secondary to a traumatic pharyngeal injury (dosing gun injury) was made.

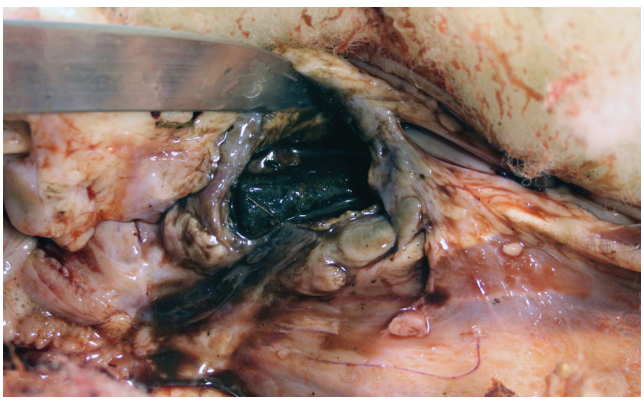

Figure 10: A bolus in a tear of the pharyngeal mucosa surrounded by necrotic tissue. Photo: Denise Murphy.

RESPIRATORY TRACT

Jaagsiekte/Ovine Pulmonary Adenomatosis

Sligo RVL diagnosed two cases of ovine pulmonary adenocarcinoma caused by Jaagsiekte sheep retrovirus in five- and six-year-old ewes from different flocks in January. Both cases presented with other causes of death but characteristic pulmonary lesions (multifocal-to-coalescing grey consolidations in wet lungs that exuded fluid when incised) were observed and PCR tests for Jaagsiekte Sheep Retrovirus (JSRV) were positive. One of the ewes had a concurrent patent lungworm infestation and enteric salmonellosis. The other failed to lamb and developed sepsis when the lambs died *in utero* and became emphysematous. Both had been described as 'failing.'

Ovine pulmonary adenocarcinoma or 'Jaagsiekte disease' has a long incubation period and often presents as a chronic wasting condition. Infection probably occurs when the lamb is very young either from ingestion of infected colostrum or by direct contact with infectious pulmonary secretions. These secretions can pour from the animals' nostrils when they lower their heads or can be induced to pour copiously by raising of the back legs. This latter method is described as the 'wheelbarrow test.' As an often-undiagnosed disease in flocks, Jaagsiekte is considered one of the 'iceberg diseases' where the impact of a disease is much greater than its perceived occurrence.

URINARY/REPRODUCTIVE TRACT

Ovine abortion

Sligo diagnosed ovine abortions associated with *Chlamydia abortus, Coxiella burnetii, Bacillus licheniformis, Campylobacter fetus* and *E. coli* infections during January 2023.

Uterine rupture

Athlone RVL examined a four-year-old-ewe with a history of having lambed two dead lambs two days previously. She was treated with antibiotics by the flock owner. The carcase preservation was very poor with advanced tissue autolysis, and her body condition was good. The uterus had not involuted; there was a large 8-10cm length tear in the body of the uterus and foul-smelling red fluid in it and free in the caudal abdomen. *E. coli* was isolated from several tissues. A conclusion of uterine laceration or rupture was made.

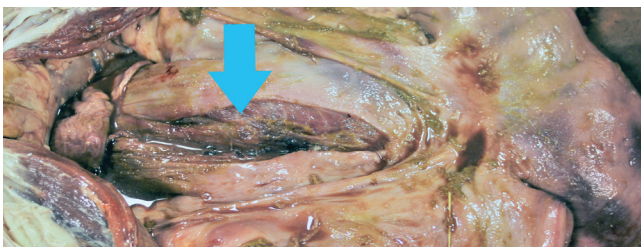

Figure 11: A tear in the body of the uterus (uterine horns visible on the right). Photo: Denise Murphy.

Miscellaneous

Sligo RVL diagnosed two cases of subdural haematomas in rams. The cause of both cases were rams fighting with other rams on the same farm.

PIGS

Epiphysiolysis

A one-year-old primiparous sow was submitted to Dublin RVL. She was euthanised as the farmer suspected an injury or a spinal weakness. On gross post-mortem examination, she presented with bilateral separation of the head of the femur from the femoral shaft (epiphysiolysis). Associated with this, there was marked damage to surrounding musculature of the hindlimbs characterised by necrosis and haemorrhage circumferentially and fibrosis of the joint capsule of the hips bilaterally. Epiphysiolysis (separation of proximal femoral epiphysis) is described in sows less than three years and is the result of a combination of weakened physis and tension from the hip abductors. It is an extremely painful and debilitating lesion and, when bilateral, results in animals which are unable to stand. Epiphysiolysis is one of the abnormal conditions of the articular epiphyseal cartilage complex in pigs. Contributing factors to its development include: rapid growth rates, lack of exercise, hereditary components, and dietary factors.

Figure 12: Epiphysiolysis, or separation of the head of the femur (bottom right) from the femoral shaft (top left) and marked associated damage to surrounding musculature. Photo: Sara Salgado.