REGIONAL VETERINARY LABORATORIES REPORT

January 2025

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 652 carcases and 450 foetuses during January 2025. Additionally, 1,298 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 2025.
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 bacteraemia/septicaemia were the most common diagnoses at necropsy in cattle in the RVLs during January 2025.

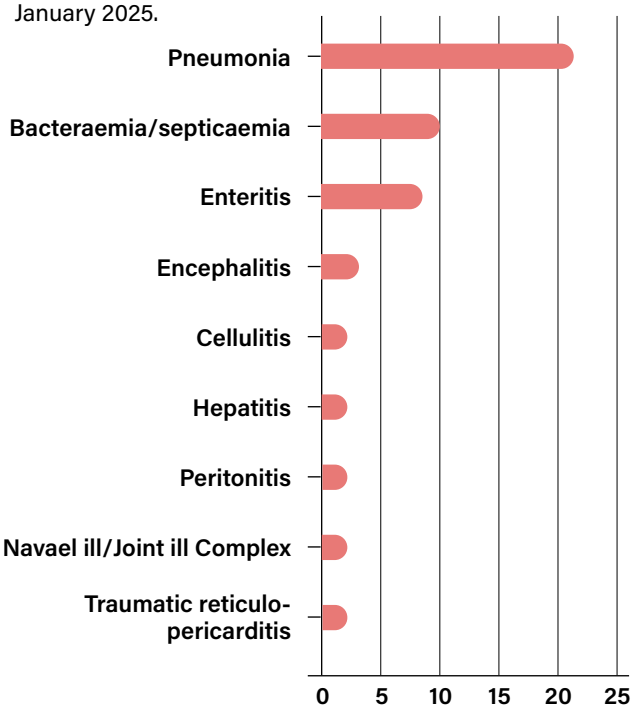

Table 1: **The most common diagnoses in cattle submitted for necropsy in January 2025.**

Gastrointestinal Tract

Peritonitis

Sligo RVL examined the carcase of a four-day-old calf which had stopped feeding after one day and started passing bloody faeces. Despite treatment efforts and initial improvement, the calf died. On post-mortem examination, there was extensive chronic peritonitis. The gastrointestinal tract from the rumen to the proximal jejunum was fluid-filled. There was severe focal enteritis, likely causing an ileus in mid-jejunum. Ileus and chronic severe peritonitis were diagnosed as the cause of death. Trauma, e.g., being stood on by the dam, could be ruled out as cause.

Respiratory Tract

Pneumonia

Athlone RVL examined a three-month-old calf with a history of sudden death. There was severe bilateral anteroventral pulmonary consolidation with multifocal to coalescing necrotic lesions on cross-section and fibrous adhesions to the costal pleura. There was caudo-dorsal bilateral pulmonary subpleural and interlobular emphysema and the lungs had a meaty consistency. No lungworms were seen in the trachea or bronchial tree. The other organs were unremarkable. Polymerase chain reaction (PCR) tests for *Mycoplasma bovis* and *Mannheimia haemolytica* were positive. Histopathology of the lung lesions showed a diffuse, fibrinosuppurative broncho-interstitial pneumonia with caseous necrotic lesions consistent with *Mycoplasma bovis* and bronchitis, hyaline membranes and type 2 epithelisation suggestive of a viral involvement although no viruses were detected by PCR.

Figure 1: **Cranioventrally distributed pneumonia. Photo: Denise Murphy.**

An eight-month-old bought-in Friesian-cross weanling was submitted to Limerick RVL with a history of ill-thrift and respiratory signs. Post-mortem examination revealed consolidation of two thirds of the lungs, distributed cranioventrally with multifocal microabscesses in the parenchyma of the lung. The abomasal mucosa was inflamed with a cobblestone appearance suggestive of parasitism. Multiple bacteria were detected by PCR from the lungs and a faecal egg count of 3,100 eggs per gram (EPG) was found. A diagnosis of severe pneumonia and parasitic gastroenteritis (PGE) was made.

Figure 2: **Consolidation of the lungs, distributed cranioventrally. Photo: Brian Toland.**

Limerick RVL examined a nine-month-old Aberdeen Angus weanling with a history of non-response to treatment for respiratory signs. The animal had been housed five days previously and its cohorts were also coughing. The lungs were congested with multifocal areas of 'ground glass' emphysema and multifocal bullae of different sizes; lymph nodes were markedly enlarged. 'Ground glass' emphysema is suggestive of viruses or lungworm (none detected) and bullae are air-filled spaces >1cm in diameter within the lung. Both lesions have developed because of emphysematous destruction of the lung parenchyma. There were multifocal pinpoint haemorrhages in the trachea and blood clots present in the airways. Bovine respiratory syncytial virus (RSV) was detected by PCR and a diagnosis of severe viral pneumonia was made.

Urinary/Reproductive Tract

Nephritis

An eleven-year-old cow was submitted to Kilkenny RVL with a history of weight loss over a number of months. There were bilateral white-spotted kidneys, with a severe nephritis and, multifocally, the renal medulla contained purulent material. *Proteus* sp. was cultured; however, the changes were chronic, and this culture result may not be representative of the original agent. The vigorous growth and swarming properties of *Proteus* frequently means it outgrows other pathogens on agar plates. Because it is both a common contaminant and an infrequent/opportunist pathogen, it is always very difficult to interpret the isolation of *Proteus* in culture.

On histopathology, there was severe, suppurative necrotising nephritis with extensive fibrosis, and multifocal lymphocytic inflammatory foci. Chronic/active severe nephritis was diagnosed.

Figure 3: **Nephritis and multifocal suppuration of the renal medulla. Photo: Aideen Kennedy.**

Abortion

Two eight-month-gestation foetuses were submitted to Kilkenny RVL. At that point, there had been four abortions in the herd. One foetus had been scavenged with many internal organs not available to examine. The second foetus was emphysematous with fibrin on the lungs. *Salmonella enterica* serotype Dublin was cultured from both. *Salmonella* Dublin is a potentially zoonotic agent and control of spread of *S.* Dublin infection in cattle is advised, via vaccination, hygienic measures (such as isolation of sick animals), and disinfection of contaminated fomites and houses.

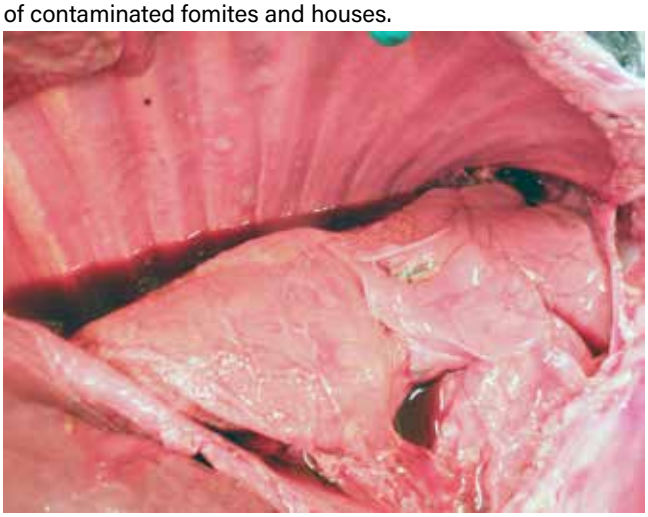

Figure 4: **Emphysematous foetus with fibrin on the lungs, *Salmonella* Dublin was isolated. Photo: Aideen Kennedy.**

Foetal asphyxia

Athlone RVL examined a day-old calf that died, having failed to stand or suckle post-calving. No significant molecular or culture results were identified. On histopathological examination of the lungs, there was severe meconium aspiration, amniotic squames, and keratin. This can be triggered by severe intrauterine hypoxia and foetal acidosis. Foetal asphyxia can reflect any of the following issues: slow parturition, foetal oversize, subclinical hypocalcaemia, or placentitis. At this time of year, RVLs frequently encounter cases like this in the post-mortem room. If slow calving, retained cleanings, milk fevers, etc. are occurring on a farm,

we would encourage blood-sampling some of the post parturient and late-stage dry cows (if sampling is possible without adverse effects on the cows) and submission for a transition cow profile to assess metabolic parameters.

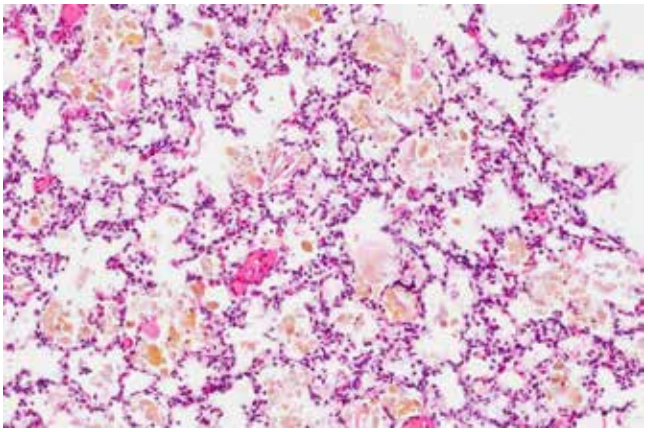

Figure 5: **Brown-staining material indicating meconium aspiration; pink-staining amniotic squames and keratin. Photo: Aoife Coleman.**

Cardiovascular System

Patent ductus arteriosus

The carcase of a four-week-old calf, which had been weak since birth and pined away despite suckling, was submitted to Sligo RVL. On post-mortem, there was a patent ductus arteriosus. There was also enteritis. *Cryptosporidium parvum* was detected in intestinal contents.

Patent ductus arteriosus is a congenital condition where the foetal ductus arteriosus fails to close after birth in the normal manner. This allows some of the oxygenated blood from the left heart to flow back to the lungs from the aorta to the pulmonary artery, because of the pressure differential between these large vessels. Death usually occurs due to pulmonary hypertension and right-sided heart failure.

Caudal vena caval thrombosis

The carcase of a four-year-old cow with a history of sudden death was submitted to Sligo. On post-mortem examination, there was extensive anaemia. There was a ruptured pulmonary aneurysm associated with caudal vena caval thrombosis.

Cardiac tamponade

The carcase of a three-month-old calf, which had been found dead, was submitted to Sligo RVL. On necropsy, there were large volumes of serous fluid in the thorax, pleural space, and pericardium. There was some ascites. There was bruising in subcutaneous musculature around the axilla and left ribcage. The lungs were heavy and wet with lobular oedema and large amounts of froth in the trachea. The liver was enlarged and friable. The heart and great vessels were anatomically normal. The cause of death in this animal was most likely severe pulmonary oedema and cardiac tamponade. Heart failure most likely occurred acutely prior to death. The bruising on the left ribcage is considered unusual and is likely of traumatic origin. Due to its location adjacent to the heart a traumatic impact in this area (e.g., a kick or headbutt from another animal) that caused cardiac fibrillation and heart failure resulting in passive congestion of lungs and body organs cannot be ruled out as cause. An infectious cause was not identified.

Nervous System

Thrombotic meningoencephalitis

Athlone examined a 15-month-old heifer with a history of being lifeless and recumbent and dying soon afterwards. On gross post-mortem, there was a mild swelling of both hindlimbs and fibrinous arthritis in the stifle and hock joints bilaterally. There was scant faeces and thick bile in the gall bladder, indicating recent inappetence, and the other organs were unremarkable. The brain appeared normal grossly and did not fluoresce under ultraviolet (UV) light. Histopathology showed that there were multifocal lesions, throughout all brain sections examined, of thrombosis, vasculitis, fibrinoid necrosis, haemorrhage, and suppuration indicative of thrombotic meningoencephalitis (TME) caused by *Histophilus somni* infection. There was an interstitial pneumonia pattern in the lungs suggestive of a bacteraemia/septicaemia. A PCR test of the joint fluid did not detect *H. somni*. Despite this, a diagnosis of TME/*H. somni* septicaemia is still indicated based on the classic histopathological changes seen in the brain.

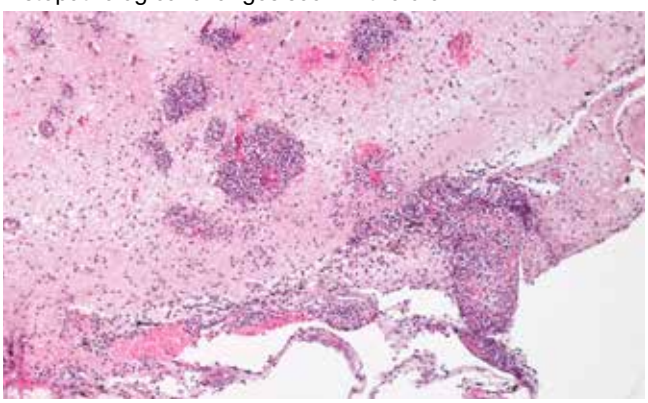

Figure 6: **Brain lesions of thrombosis, vasculitis, fibrinoid necrosis, haemorrhage, and suppuration indicative of thrombotic meningoencephalitis. Photo: Denise Murphy.**

Histophilus somni

The *Histophilus somni* disease complex encompasses septicaemia and associated complications: undifferentiated fever, pneumonia, pleuritis, myocarditis, thrombotic meningoencephalitis (TME), tenosynovitis, and otitis media.

H. somni arthritis-synovitis typically occurs following episodes of undifferentiated fever (pyrexia of unknown origin) and TME. There is polyarthritis with firm swellings of joints, and animals display stiffness, lameness, and knuckling.

Cerebrocortical necrosis

Athlone RVL examined a 10-month-old weanling with a history of having been found dead. The main post-mortem gross finding was areas of yellowing on the cerebral cortex and flattening of the gyri. There was a fibrin clot free in the thoracic cavity and pulmonary congestion and oedema. There was mild fluorescence of the brain under UV light. Renal cortex lead concentrations were not significant. Histopathology of the brain showed that the superficial lamina of the cerebral cortex contained multifocal neuropil

vacuolation, rarefaction, and cavitation with scattered brown pigment-laden cells (Perls stain was negative for haemosiderin and, therefore, it is likely these cells contain lipofuscin form digested fat), mild haemorrhage, and prominent endothelium. This differed in appearance from the usual cerebrocortical necrosis (CCN) cases seen – also called polioencephalomalacia. On consultation with the referring private veterinary practitioner, it transpired that the animal had been treated for CCN five months previously, along with three other comrades, but appeared to have made a full recovery. CCN is associated with diets deficient in thiamine, or that contain excess sulphur, as well as some other less common causes like lead poisoning and salt poisoning/water deprivation.

Figure 7: **Cerebrocortical necrosis, yellowing on the cerebral cortex and flattening of the gyri. Photo: Denise Murphy.**

Musculoskeletal

Arthritis (joint ill)

A four-day-old calf was submitted to Kilkenny RVL. Multiple joints contained cloudy joint fluid and fibrin; this was most severe in the hock joints. There was umbilical oedema. The calf was also a ruminal drinker. The passive transfer of colostrum immunity as measured by the zinc sulphate turbidity test (ZST) was considered adequate but suboptimal. *Escherichia coli* was cultured from multiple organs indicating a bacteraemia. A review of umbilical hygiene and colostrum management was advised.

Sheep

Parasitic gastroenteritis and pneumonia were the most common diagnoses at necropsy in sheep in the RVLs during January 2025.

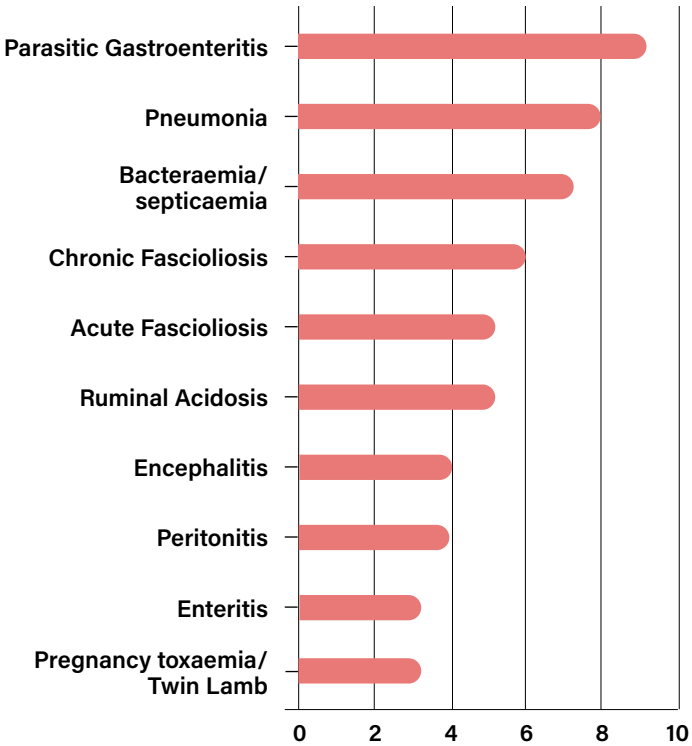

Table 2: **The most common diagnoses in sheep submitted for necropsy in January 2025.**

Gastrointestinal Tract

Ruminal acidosis

Sligo RVL diagnosed ruminal acidosis in two 10-month-old lambs. The lambs had been housed five days prior to death and fed with oats and a small amount of concentrate. On post-mortem examination, there were large amounts of grains in the rumen. The ruminal pH in both lambs was 3.4 (ruminal pH is typically 6.5 to 7 and values below 5.5 are considered diagnostic of ruminal acidosis).

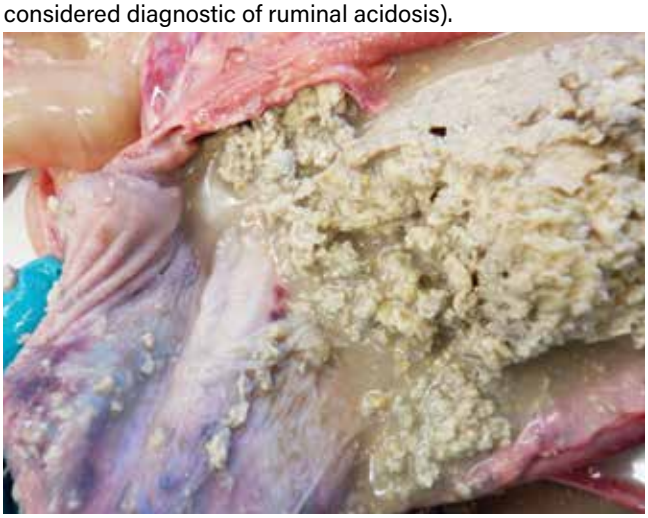

Figure 8: **Ruminal acidosis, large amounts of grain visible in the rumen. Photo: Aideen Kennedy.**

Feeding of *ad lib* concentrates to sheep that have not been appropriately conditioned to the diet is considered the likely cause of the deaths observed. Ruminal acidosis may occur sub-clinically in other animals and predisposes to various other diseases due to immunosuppression and proliferation of intestinal pathogens such as *Clostridium perfringens*.

Figure 9: **Surface of a liver with haemangiosarcoma. Photo: Aoife Coleman.**

Haemangiosarcoma

Athlone RVL examined a three-year-old ewe, which had been submitted with a history of sudden death. The carcase was profoundly pale and, on examination of the abdominal cavity, the liver was grossly abnormal, with myriad tortuous, multifocally-dilated blood vessels/cavernous sinuses affecting 100 per cent of the organ. A focal enlarged lesion of similar pathology was identified in the spleen. Further, there was a haemoabdomen with multifocal organised blood clots in peritoneum and adherent to liver and spleen. On histopathology of the liver, a diagnosis of a haemangiosarcoma was applied.

Figure 10: **Cross-section of liver with haemangiosarcoma. Photo: Aoife Coleman.**

Fascioliosis

Sligo RVL diagnosed acute and chronic fascioliosis in several ovine submissions across a wide age range. Common findings were anaemia, ascites, haemorrhage, liver fibrosis, and *Fasciola hepatica* in the gall bladder.

Respiratory Tract

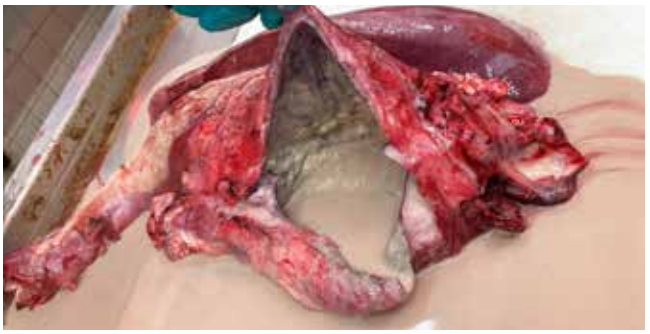

Figure 11: **Walled-off abscess in the lung of a Charollais ram. Photo: Brian Toland.**

Pulmonary abscess

A four-year-old Charollais ram was submitted to Limerick RVL with a history of inappetence and inability to stand, there was no response to treatment. Post-mortem examination revealed the left lung was firmly adhered to the ribcage and contained a rugby ball-shaped, walled-off abscess involving the whole lung. *Truperella pyogenes* was detected upon culture. Many clinical manifestations are attributed to *T. pyogenes* (formerly *Arcanobacterium pyogenes*, *Actinomyces pyogenes* and *Corynebacterium pyogenes*) infections in domestic animals, including: mastitis, pneumonia, metritis, arthritis, lymphadenitis, otitis, peritonitis, umbilical thickening, endocarditis, organ abscesses, osteomyelitis, and urinary and genital tract infections.

Figure 12: **Severe fibrinous pleuritis in a lamb. Photo: Aideen Kennedy.**

Fibrinous pleuropneumonia and arthritis

Two three-week-old lambs were submitted to Kilkenny. There had been a history of lameness and death usually within 24 hours. Both lambs had severe fibrinous pleuritis and pneumonia. Multiple joints contained fibrin. *M. haemolytica* was cultured from swabs of the joint and multiple organs suggesting bacteraemia.

Figure 13: **Fibrinous arthritis in a lamb. Photo: Aideen Kennedy.**

Urinary/Reproductive Tract

Abortion/toxoplasmosis

A number of almost five-month-gestation ovine foetuses were submitted to Kilkenny RVL, where multiple abortions had occurred in the submitting flock. There were no visible lesions on the foetuses, but there was suspected inflammation of the placentas predominantly affecting the cotyledons. *Toxoplasma gondii* PCR tests were positive, this is a potentially zoonotic agent.

Figure 14: ***Toxoplasma gondii*** **abortion, inflammation of the placenta predominantly affecting the cotyledons. Photo: Aideen Kennedy.**

Enzootic abortion of ewes

Two five-month gestation lamb foetuses were submitted to Kilkenny RVL. The placenta was inflamed with changes noted primarily in the intercotyledonary areas. PCR results were positive for *Chlamydophila abortus*, the causative organism of enzootic abortion of ewes (EAE). *C. abortus* can cause abortion late in the last month of pregnancy, and weak lambs which often die early in life. This is a potential zoonotic agent. Pregnant women should avoid any contact, direct or indirect, with lambing sheep and also with cattle herds where EAE is a possibility. The very old, the very young, and those who are immunocompromised should also be excluded from contact with lambing/calving animals or the products of lambing/calving.

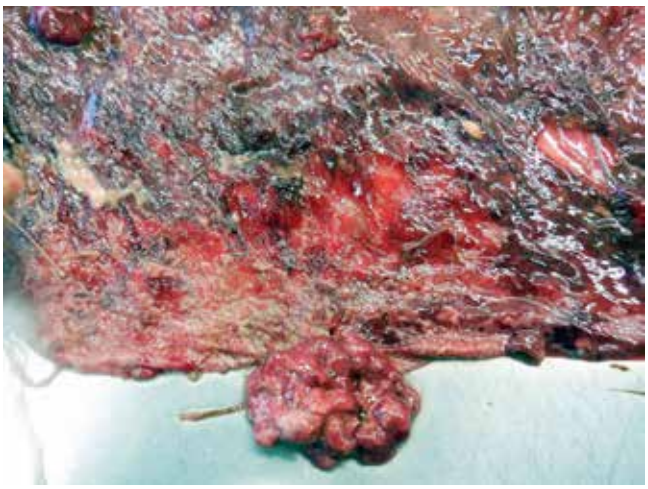

Figure 15: **Enzootic abortion of ewes, with gross changes primarily in the intercotyledonary areas. Photo: Aideen Kennedy.**

Foetal hydrops amnion

Sligo RVL examined the carcase of a four-year-old ewe which had been noted weak and lying down a lot before death. On post-mortem examination, there was a severely expanded uterus containing two small foetus lambs and an extensive amount of amniotic fluid. One foetus was larger with an enlarged abdomen containing abdominal haemorrhage and enlarged kidneys. Histopathology of the foetal kidney showed severe interstitial fibrosis and the presence of small amounts of mesenchymal tissue. The glomeruli were mature but variably sized. There were variably-sized torturous ductuli, and fibrosis leading to compression and distortion of ducts. Some crystals were present. Hydrops amnion or hydramnios was diagnosed in this case which was likely caused by foetal renal fibrosis. The observed crystals were most likely oxalate crystals and may have contributed to renal fibrosis.

Figure 16: **Severely enlarged foetal kidneys in a case of hydramnios in a lamb. Photo: Rebecca Froehlich-Kelly.**

Musculo-skeletal

Suppurative cellulitis

Athlone RVL examined an 11-month-old lamb with a history of a swelling on the ventral abdomen and possible traumatic injury. It had been treated by the flock owner with antibiotics but was unable to get up and had been euthanised. The

carcase preservation and body condition were very good, with a bodyweight of 42kg. There was a severe, diffuse, suppurative cellulitis of both the thoracic and abdominal walls, from just caudal to the forelimbs to the pelvis. A diagnosis of a suppurative cellulitis was concluded.

Figure 17: **Severe, diffuse, suppurative cellulitis of both the thoracic and abdominal walls. Photo: Denise Murphy.**

Poisonings

Pieris poisoning

Athlone RVL examined three of eleven pregnant ewes found dead at pasture. Lesions were similar in all three, with severe congestion/haemorrhage into the kidneys and lungs bilaterally. Multiple suspicious plant remnants were identified within the rumen rafts of all examined ewes. The National Botanic Gardens confirmed the suspicious plant remnants identified in the reticulorumen to be a species of the *Rhododendron* family (*Pieris japonica variegata*). These plants contain large amounts of grayanotoxin which is highly lethal to sheep. Toxicity is dose-dependent but 100-200g can be lethal. Grayanotoxins block sodium transport channels in cell membranes causing both cardiac and skeletal muscle dysfunction and also nerve dysfunction. Hypersalivation, bruxism, and vomiting are typical clinical signs. Further investigation and expansion of the clinical history determined that the ewes had broken into a garden the preceding evening.

Other species

Tuberculosis

Limerick RVL examined an emaciated adult badger (*Meles meles*) submitted for a post-mortem examination by a veterinary inspector investigating a reactor breakdown. Necropsy revealed generalised caseous abscessation of the left lung involving bronchial and mediastinal lymph nodes. *Mycobacterium bovis* was cultured from this lesion.

Figure 18: **Caseous abscessation of the left lung involving bronchial and mediastinal lymph nodes in a badger. Photo: Brian Toland.**