

# Regional Veterinary Laboratories Report

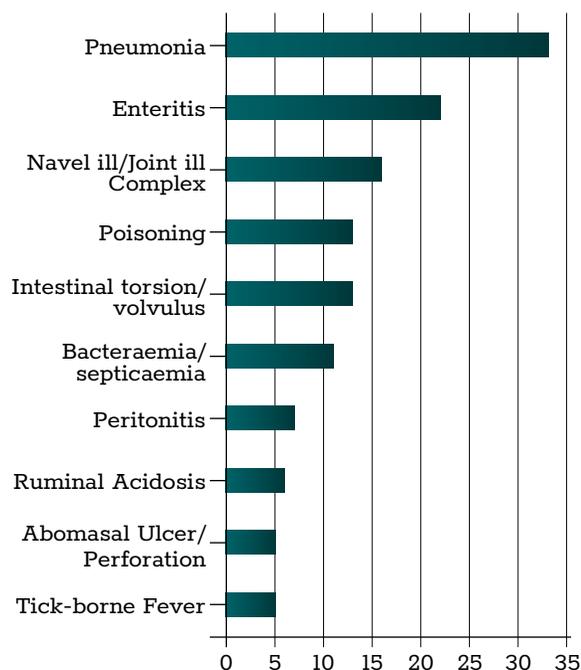
May 2022

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 541 carcasses and 26 fetuses during May 2022. Additionally, 1,808 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 May 2022.

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

Enteritis and pneumonia were the most common diagnoses from necropsies in cattle in the RVLs during May 2022.



**Table 1: The most common diagnoses in cattle submitted for necropsy in May 2022.**

## GASTROINTESTINAL TRACT

### Abomasal ulcers

A two-month-old calf was submitted to Kilkenny RVL. On necropsy there was severe, diffuse, fibrinous peritonitis with free fluid in the abdominal cavity. The abomasum was adhered to the abdominal wall. The abomasum wall was very oedematous; the mucosa was very inflamed and there were multifocal areas of ulceration. There were multiple fibrinous adhesions between the intestines and the walls of the intestine were oedematous. There were scant intestinal contents. On histopathology, *Sarcina* sp. was visible in the abomasum. Although autolysed, examination of the intestines showed crypt abscessation, an indicator of enteritis, and multiple coccidial organisms were visible. Peritonitis resulting from the abomasitis was diagnosed. Faecal samples from

cohorts were requested to examine for coccidial oocysts. *Sarcina* are fastidious Gram-positive anaerobic bacteria that typically occur in characteristic cubical packets of eight or more cells. Calves are often found dead after a short illness characterised by bloat. The gross lesions associated with abomasal bloat include emphysema and oedema of the abomasal wall, mucosal hyperaemia and haemorrhage, and rupture of the abomasum.



**Figure 1: Peritonitis in a calf with abomasal ulcers. Photo: Aideen Kennedy.**

## RESPIRATORY TRACT

### Pneumonia

A two-month-old calf with suspect pneumonia was submitted to Kilkenny RVL. There had been multiple cases in the herd, with a poor response to treatment. On post-mortem examination, the calf was very dehydrated. There was cranioventral pulmonary consolidation, with approximately 70-80 per cent of the lungs affected. Caudally, the lungs had a rubbery texture. Within the consolidated region there were purulent foci and multifocal 'rice grain' abscessation. The associated lymph nodes were enlarged. Multiple agents were identified, including *Mycoplasma bovis*, *Histophilus somni*, *Pasteurella multocida* and parainfluenza virus type 3 (PI3). A review of respiratory disease control on-farm was recommended given the critical role of host and

environmental factors such as stress, immunity, nutrition, management, ventilation and housing practices.

*Mycoplasma bovis*-associated pneumonia can occur at any age. It has been associated with outbreaks in feedlot cattle and can be followed by an outbreak of polyarthritis after the initial respiratory cases. *M. bovis* is capable of causing pneumonia alone or as part of the bovine respiratory disease complex where other infections incite the initial insult, damaging the mucosa, reducing ciliary activity and weakening the respiratory tract immune defences.



**Figure 2: Microabscessation in a lung from which *Mycoplasma bovis* and other agents were identified. Photo: Maresa Sheehan.**

### URINARY/REPRODUCTIVE TRACT

#### Cystitis, nephritis and urethritis

A four-month-old calf was submitted to Kilkenny RVL; there was a history of respiratory disease on this farm. On gross examination, there was a severe, diffuse peritonitis associated with a severe cystitis, nephritis and urethritis. There were no gross pulmonary lesions in this calf. *Escherichia coli* was isolated from multiple organs, which is suggestive of a bacteraemia or septicaemia.



**Figure 3: Urethritis in a four-month-old calf. Photo: Maresa Sheehan.**

The lesions seen in this case are commonly associated with ascending infection from a neonatal navel infection, or as a sequel to a bacteraemia/septicaemia. It is suspected that this case may not be representative of the clinical history of respiratory disease, and additional cases were requested for examination if deaths continued. A review of early calfhood management was recommended.



**Figure 4: Nephritis in a four-month-old calf. Photo: Maresa Sheehan.**

### CARDIOVASCULAR SYSTEM

#### Myocarditis

Sligo RVL examined the carcase of an eight-year-old cow which had been reported to be declining over the previous two weeks. The clinical presentation started with hind leg lameness, which spread to both legs, followed by conjunctivitis and apparent blindness in both eyes. There also was haemorrhagic diarrhoea and respiratory distress before death. Gross post-mortem findings included bilateral, reddened conjunctivae and fibro-purulent arthritis in the hindlimb joints. There were multifocal, pinpoint and coalescing, pale areas present on the kidney cortices. The meninges were diffusely congested. There was a focal, approximately 2cm-sized abscess present in the myocardium of the left ventricular wall. There was severe interlobular oedema in the lungs. *Trueperella pyogenes* was cultured from multiple sites. Myocardial abscessation, bacteraemia and likely septicaemia were diagnosed as the most likely cause of death. The foot and kidney lesions were chronic, and the foot lesions may have been the initial entry portal of the infection in this case. The location of the myocardial abscess was considered unusual as it did not involve heart valves as would typically be seen in a chronic bacteraemia. Cardiac lesions such as this are usually described in infections caused by *H. somni*, and these are typically seen in feedlot cattle rather than mature cows. However, *H. somni* was not identified in lesions in this case.



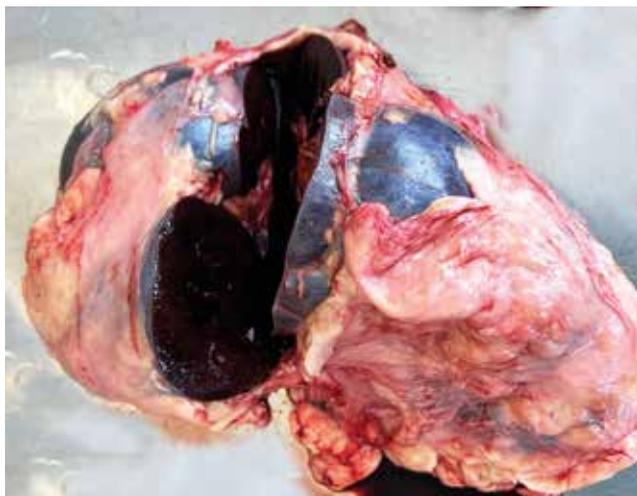
**Figure 5: Myocardial abscessation in a mature cow. Photo: Shane McGettrick.**

### Babesiosis

Sligo RVL diagnosed babesiosis in a four-year-old bovine. The animal had been observed away from the herd on the evening prior to death, with no other specific signs described by the owner. On necropsy, a substantial number of *Ixodes ricinus* ticks were observed on the carcass. There was diffuse icterus, and hepatomegaly as well as splenomegaly. The kidneys were dark red, and the urine was port wine-coloured. There was diffuse roughening, haemorrhage and erosion present on the abomasal mucosa. The pleura and other serosal surfaces presented with multifocal haemorrhages. The presence of *Babesia divergens* was confirmed by polymerase chain reaction (PCR).



**Figure 6: Haemorrhagic erosive abomasitis in a case of babesiosis in a bull. Photo: Shane McGettrick.**



**Figure 7: Haemorrhagic kidneys in a case of babesiosis in a bull. Photo: Shane McGettrick.**

### MUSCULOSKELETAL

#### Blackleg

A 15-month-old Friesian heifer was submitted to Limerick RVL with a history of having been found dead at grass. Necropsy findings included fibrinous pericarditis, and blackened, haemorrhagic and swollen muscle in the brisket area. The fluorescent antibody technique returned a positive result for *Clostridium chauvoei*. A diagnosis of blackleg was made.

### POISONINGS

#### Ragwort poisoning

A two-year-old bullock from a beef enterprise, bought in at 18 months old was submitted to Limerick RVL. Its history included inappetence, depression, normal temperature, and failure to respond to any treatment. Four deaths had occurred in a group of 49 at grass. At necropsy, there was an increased volume of straw-coloured fluid in the thoracic and abdominal cavities, severe abomasal oedema and a diffusely yellow, firm, cirrhotic liver. These gross findings were suggestive of toxic hepatopathy and subsequent hepatic encephalopathy. The most common cause is ragwort (*Senecio jacobea*) poisoning. Histopathology of the liver revealed megalocytosis, bile duct hyperplasia, fatty change, and fibrosis. These changes are consistent with toxic hepatopathy. The abomasal oedema could be explained by hepatic fibrosis causing passive congestion of the portal circulation, possibly exacerbated by hypoalbuminaemia.

In a separate case in Limerick RVL, two yearling cattle were also diagnosed with ragwort poisoning.



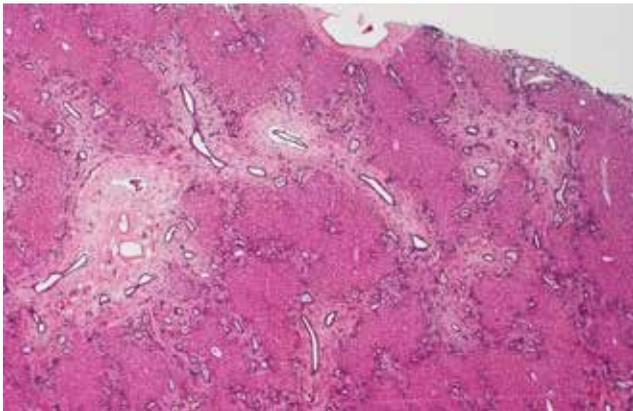
**Figure 8: Oedema of the abomasal mucosa in a case of ragwort poisoning. Photo: Alan Johnson.**

### MISCELLANEOUS

#### Congenital hepatic fibrosis

A four-day-old calf was submitted to Kilkenny RVL for examination. The calf had not behaved normally since birth. On necropsy, the liver was yellow with rounded edges, and firm on palpation and on incision. The carcass was pale and the blood was dilute in appearance. Zinc sulphate turbidity test (ZST) results suggested a complete failure of passive transfer of immunity. *E. coli* was isolated from the lungs, which may be suggestive of a bacteraemia/septicaemia. On histopathological examination, the normal architecture of the liver was distorted by large number of bile ducts, some tortuous, and fibrous tissue distending the portal triads; there was multifocal portal-to-portal bridging fibrosis. Multifocally, there were large bile plugs in these bile ducts. One of the key differentials for the lesions seen is congenital hepatic fibrosis. Congenital fibrosis is described as a product of ductal plate malformations. Although not seen in this case, renal polycystic

disease is described in conjunction with some of these cases in other species. We encounter this condition sporadically in the laboratory service.



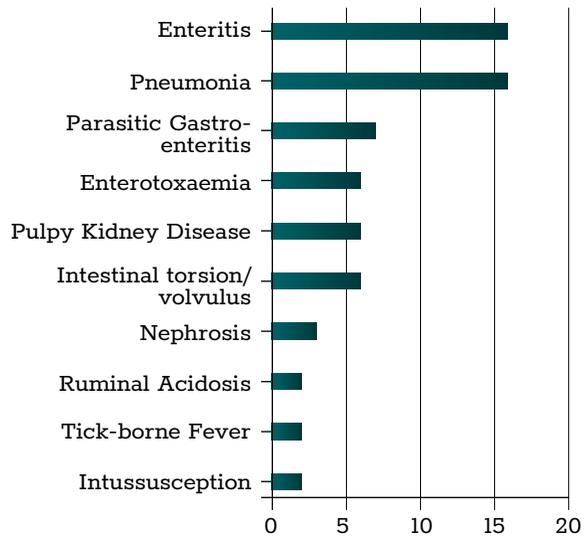
**Figure 9: Lesions of congenital hepatic fibrosis. Photo: Maresa Sheehan.**

**Tick-borne fever**

Tick-borne fever was diagnosed by Sligo RVL in calves from two different holdings during May. Tick-borne fever is caused by *Anaplasma phagocytophilum* and transmitted by *I. ricinus* ticks. It commonly causes immunosuppression and can, therefore, predispose to a range of other diseases. The first calf was two weeks old and had been on pasture since calving. It displayed kicking and was recumbent when found just before death. In the days prior to death, dehorning, using caustic paste, and vaccination against clostridial diseases had been carried out. On necropsy, a substantial number of ticks were present on the carcass. There was a ruptured hepatic abscess accompanied by signs of sepsis. While the abscess potentially originated from an umbilical infection, which is common in calves of this age, tick-borne fever was considered a significant contributor leading to the death of this calf. The second case involved a two-month-old calf which had not been thriving and suddenly stopped suckling before death. Similar to the previous case, a large number of ticks was observed on the carcass. There was sero-fibrinous pericarditis and there was locally extensive necrotising dermatitis on the scrotal sac, around the application site of a rubber castration ring. Glucosuria was detected. *Clostridium perfringens*, but without its toxins, was detected in intestinal contents. DNA specific to *A. phagocytophilum* was detected systemically using PCR testing. Gross findings were highly suggestive of clostridial enterotoxaemia in this case but could not be confirmed due to the absence of the toxins. However, these toxins tend to be labile. The immuno-suppressive effect of tick-borne fever was considered significant in this calf.

**SHEEP**

Enteritis and pneumonia were the most common diagnoses from necropsy in sheep in the RVLs during May 2022.



**Table 2: The most common diagnoses in sheep submitted for necropsy in May 2022.**

**GASTROINTESTINAL TRACT**

**Parasitic gastroenteritis**

Two three-month-old ram lambs were submitted to Limerick RVL for necropsy. They had died while at grass, after being purchased at ten days of age. There was an outbreak of diarrhoea and weight loss in the group. Faecal soiling of the perineal area and watery green intestinal contents were found at necropsy. Nematodirus egg counts of 1,700 and 550 eggs per gram (EPG) were detected and coccidial oocysts were found in the intestinal contents. A diagnosis of parasitic gastroenteritis (PGE) was made.

Sligo RVL diagnosed parasitic gastroenteritis in a two-month-old lamb which just appeared slightly dull before death. On post-mortem examination, there was extensive perineal staining. There were large numbers of *Moniezia* tapeworm present in the small intestines. This species is of very low pathogenic potential, but its presence in large numbers suggests a flawed parasite control regime. A very high number of *Nematodirus* spp eggs were detected by McMasters technique. While clinical disease is usually caused by migrating *Nematodirus* spp larvae, the *Nematodirus* burden in this lamb was considered significant as there were 1,400 EPG present, which is rarely observed by the RVLs.



**Figure 10: Tapeworm recovered from the small intestines of a lamb. Photo: Shane McGettrick.**



**Figure 11:** *Moniezia* tapeworm recovered from the small intestines of a lamb, with a scalpel for scale. Photo: Shane McGettrick.

**Haemonchus contortus infection**

A one-year-old ram was submitted to Kilkenny RVL with a history of being 'off form'. On necropsy, there was foamy, green rumen content, from which a mildly acidotic rumen pH was recorded. In the abomasum, small numbers of *H. contortus* were visible. On the liver, there were multiple foci of suspect necrosis with a soft consistency. Histopathology showed a severe, multifocal-to-coalescing, pyogranulomatous hepatitis with suspected Splendore-Hoeppli material present associated with the inflammatory response. The lesions seen were suggestive of a chronic bacterial infection. *Corynebacterium* species (not *pseudotuberculosis*) was cultured from the lesion. It was felt the liver lesions were the most likely cause of death in the ram, but a review of parasite control was recommended.

Key points relating to *H. contortus* include:

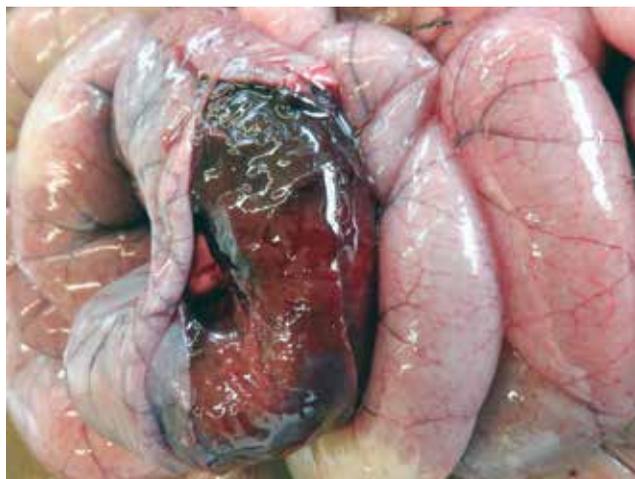
- Relatively low numbers of worms can cause disease as it is highly pathogenic.
- Diarrhoea isn't a typical feature. Anaemia, bottle jaw and poor thrive are key clinical signs.
- Adult animals develop little immunity meaning adults are at risk of developing disease.
- Examination of cohorts for signs of anaemia or for evidence of parasitism is recommended.



**Figure 12:** *Haemonchus contortus* visible (arrow) in the abomasal contents of a ram. Photo: Aideen Kennedy.

**Intussusception**

A lamb was submitted to Kilkenny RVL, having been found dead. On post-mortem examination, there was an intussusception of the small intestine. Lab results showed a marginally acidotic rumen pH. There was a light coccidial infection detected by McMaster's examination of intestinal contents. On histopathology, there was a severe, transmural fibrino-suppurative enteritis. The lesions in the intestines were severe, and although not detected by laboratory examination tests, the referring vet was advised to consider a possible role for Salmonellosis, Yersiniosis and Clostridial disease. Submission of faecal samples from affected cohorts was recommended.



**Figure 13:** An intussusception in the small intestine of a lamb. Photo: Aideen Kennedy.

**Bolus injury**

A two-year-old ewe with anorexia and progressive general weakness was submitted to Sligo RVL. This was the fifth similar death within weeks on the holding. On necropsy, a large retropharyngeal abscess with bolus in situ became apparent. Bolus injuries and dosing gun injuries are a common finding in sheep deaths. It highlights the need for good training of animal handlers in the use of dosing or bolus guns.



**Figure 14:** Retropharyngeal abscessation due to a bolus injury with the bolus still in situ in a ewe. Photo: Shane McGettrick.

**RESPIRATORY TRACT**

**Pneumonia**

A three-week-old lamb with severe weakness the day before death was submitted to Sligo RVL. This was the

fifth similar death in the group; only bought-in lambs appeared to be affected. On gross post-mortem, there was well-demarcated cranioventral pneumonia affecting approximately 40 per cent of the lung parenchyma. There was splenomegaly. *M. haemolytica* was cultured from lung tissue. *A. phagocytophilum* was detected by PCR. There was fibrino-suppurative pneumonia detected on histopathology. This lamb had a significant pneumonia which was considered as the most likely cause of death. Splenomegaly indicated a likely septicaemia and is also associated with acute anaplasmosis. Tick-borne fever was detected by PCR indicating that the immunosuppression due to this infection is likely to be significant.



**Figure 15: Well-demarcated, cranioventral pneumonia in a lamb. Photo: Shane McGettrick.**

#### Fibrinous pleuritis

Five six-week-old lambs from the same holding with a history of sudden death were submitted to Sligo RVL. There had been two further deaths previously and one further animal appeared sick. On necropsy, all lambs had similar findings. There was very severe fibrinous pleuritis with severe purulent or haemo-purulent effusion as well as pericarditis. All of the affected lambs appeared recently tail-docked. The cause of death in these lambs was bacterial pleuritis and pericarditis. Test results indicate a severe coccidial infection was also present that is likely to have worsened the predisposing stress conditions. Recent stress factors in the lambs are likely to have been significant in this case.



**Figure 16: Group of lambs with pyothorax and pleuritis. Photo: Shane McGettrick.**



**Figures 17/18: Pyothorax and pleuritis in lambs. Photo: Shane McGettrick.**