

Regional Veterinary Laboratories Report

November 2022

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 842 carcasses and 242 fetuses during Month 2022. Additionally, 2,466 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 November 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

Pneumonia and enteritis were the most common diagnoses at necropsy in cattle in the RVLs during November 2022.

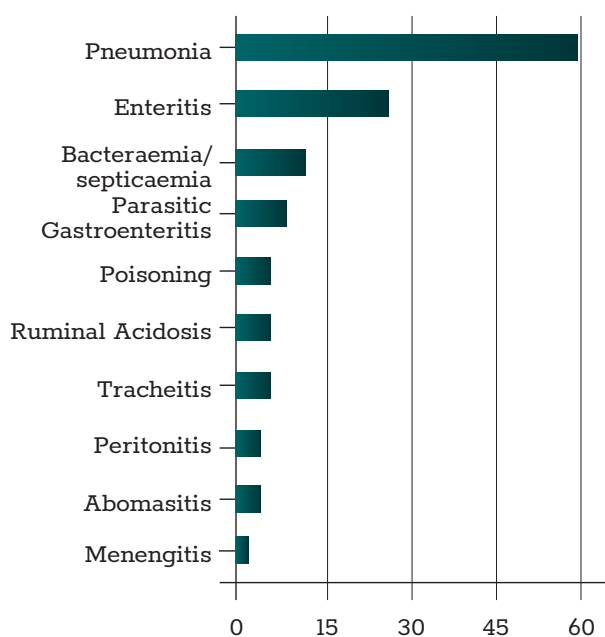


Table 1: The most common diagnoses in cattle submitted for necropsy in November 2022.

GASTROINTESTINAL TRACT

Parasitic gastroenteritis

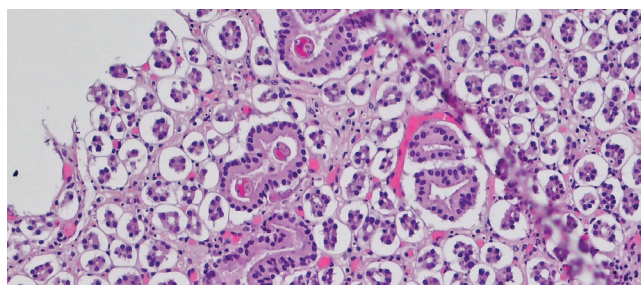


Figure 1: Hyperplastic abomasal glands with cross sections of nematodes. Photo: Maresa Sheehan.

A yearling heifer was submitted to Kilkenny RVL for necropsy. It was one of two losses out of a group of 24. The animal had been treated for diarrhoea. On gross examination, there was severe abomasal fold oedema, and focally extensive, severe abomasal ulceration in the pyloric region of the abomasum. There were bloody contents in the small intestines and liquid contents in the large intestines; the mucosa of the intestines was hyperaemic and thickened. The bile was viscous, suggestive of a period of inappetence. Histopathology revealed a severe, diffuse abomasitis with gland ectasia and hyperplasia and intralesional cross sections of nematode parasites and suspected loss of parietal cells. There was diffuse oedema and multifocal fibrosis in other sections. Although autolysis impaired the examination of intestinal section, large colony-forming bacteria were seen on the mucosal surface and an enteritis was suspected. Although faecal strongyle egg counts were negligible, type II Ostertagiasis with an associated bacterial enteritis was suspected. A review of parasite control and the submission of faecal samples from cohorts was recommended.



Figure 2: Abomasal fold oedema. Photo: Maresa Sheehan.

A nine-month-old weanling with a history of ill-thrift was submitted to Kilkenny RVL. There were ringworm lesions

affecting large areas of the skin. There was a chronic umbilical infection with possible herniation, and there was pus in the infected umbilicus in the abdominal cavity. There was severe abomasal fold oedema and hyperaemia of the abomasal wall. There were very fluid contents in the small and large intestines. Histopathology revealed an abomasitis and suspected bacterial enteritis. A diagnosis of chronic umbilical infection and suspected parasitic gastroenteritis, bacterial enteritis and dermatophytosis ('ringworm') was made. Co-morbidities in a case like this suggest that an underlying condition such as parasitism, and chronic infection may predispose to other infections such as ringworm and bacterial infections.

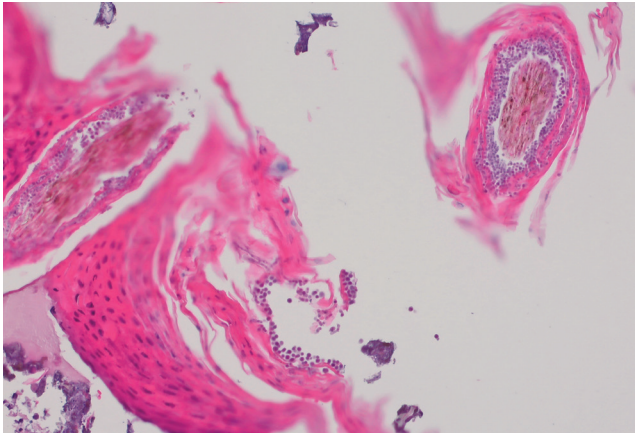


Figure 3: Ringworm arthrospores in hair follicles. Photo: Maresa Sheehan.

Acute larval paramphistomosis

Two yearling replacement dairy heifers were submitted to Sligo RVL from a group of 18 similarly aged animals that had been grazing prior to an outbreak of diarrhoea. All animals in the group were affected, but clinical signs were variable in severity and were reported as progressively worsening over a two-week period. There had been a loss of appetite, weight loss and severe watery diarrhoea, increasing dullness and lethargy eventually progressing to severe dehydration, recumbency and death in the most severely affected animals. Pyrexia was not reported as a clinical sign. Treatment attempts with antibiotics, anthelmintic and supportive fluid therapy were unsuccessful. Post-mortem examination of the heifers revealed severely dehydrated carcasses with diffuse reddening and haemorrhage of the proximal small intestine mucosa. Other body systems were unremarkable. Large numbers of paramphistome larvae (probably the rumen fluke *Calicophoron daubneyi*) were grossly visible in the affected intestinal segments. A diagnosis of acute larval paramphistomosis was made based on gross and histopathological findings. Treatment of remaining animals in the affected group with oxcylozanide and supportive fluid therapy was advised and resulted in a significant clinical improvement. Deaths due to severe intestinal burdens of larval stages of *C. daubneyi* are relatively rare but may occur when grazing cattle or sheep are exposed to very heavy pasture burdens.

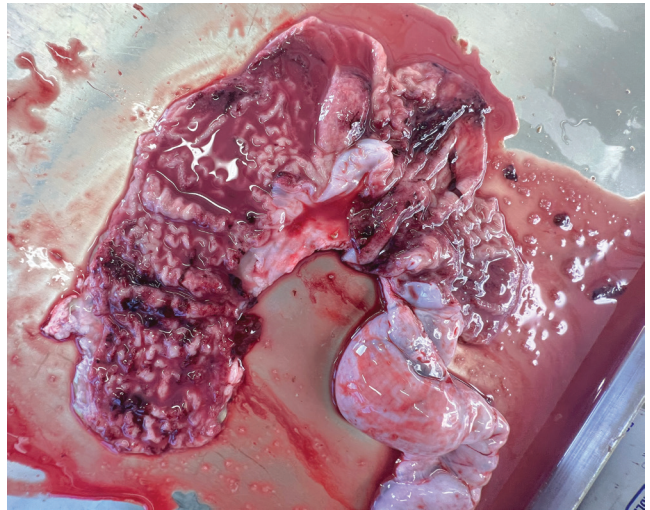


Figure 4: Segment of small intestine from a yearling heifer with acute larval paramphistomosis. Note the reddened haemorrhagic mucosa and blood-stained intestinal contents spilling onto the table containing large numbers of pink paramphistome larvae. Photo: Shane McGettrick.

RESPIRATORY TRACT

Parasitic bronchitis

A weanling with respiratory signs was submitted to Kilkenny RVL. Other animals in the herd were also showing respiratory signs. The lungs were overinflated, with multifocal 'ground glass' emphysema and bullae distributed caudo-dorsally. Approximately 15 per cent of the pulmonary tissue was consolidated cranio-ventrally. Small numbers of *Dictyocaulus viviparus* lungworm were seen in the lower airways. In addition, positive polymerase chain reaction (PCR) results for bovine respiratory syncytial virus (BRSV) were obtained. A review of respiratory disease control, including parasite control, was recommended.



Figure 5: Opened bovine larynx with visible *Dictyocaulus viviparus*. Photo: Denise Murphy.

Athlone RVL examined an eight-month-old weanling with a history of respiratory signs, having been brought indoors and rapidly deteriorating despite treatment. There had been seven or eight similar losses in the previous seven days. On gross post-mortem examination, there was bilateral

caudo-dorsal subpleural and interlobular emphysema with a meaty consistency; and cranio-ventral consolidation with tiny abscesses on cross section. Lungworm were seen in the larynx, trachea and bronchial tree. *Mannheimia haemolytica*, *Pasteurella multocida*, *Mycoplasma bovis* and *Histophilus somni* were detected in the lungs by PCR. A heavy lungworm infection and a high strongyle egg count of 2,500 eggs per gram (EPG) were detected in the faeces. Histopathology of the affected lung showed a suppurative broncho-interstitial pneumonia with cross sections of lungworm visible. A diagnosis of parasitic ('hoose') pneumonia and secondary bacterial infection was made.



Figure 7: Well-demarcated cranioventral lung consolidation in a weanling bull with bronchopneumonia due to *Mannheimia haemolytica*. Photo: Shane McGettrick.

A seven-month-old Hereford-cross weanling was submitted to Limerick RVL for necropsy. The history recounted a period of poor thrive and respiratory signs. It was dosed for worms and fluke before being found dead a half hour later. Bronchopneumonia was detected upon gross examination. Consolidation of the cranial lung lobes, emphysema and pneumonia involving the middle and caudal lung lobes and froth in the trachea were observed. No lungworms were seen. No significant bacterial pathogens were isolated on routine culture, but lung tissue was PCR positive for *Mycoplasma bovis* and *P. multocida*.

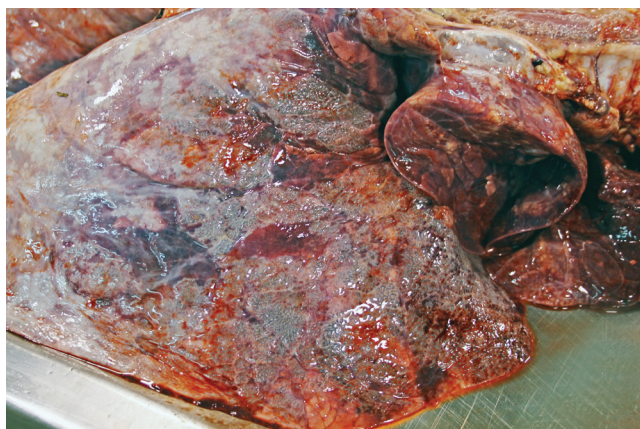


Figure 6: Subpleural emphysema with a 'ground glass' appearance characteristic of *Dictyocaulus viviparus* infection. Photo: Denise Murphy.

Pneumonia

A nine-month-old Hereford-cross weanling was submitted to Limerick RVL for necropsy. There had been four deaths in the herd in the previous six weeks. The animal had been found in a collapsed state and died shortly afterwards. Necropsy disclosed consolidation of approximately 40 per cent of the lung volume, bronchial and mediastinal lymph nodes markedly enlarged. Abomasal mucosa was hyperaemic with a mild cobblestone appearance suggestive of parasitism. When opened, the intestines revealed hyperaemic mucosa with watery green contents. *Bibersteinia trehalosi* was identified by culture and multiple bacterial agents causing pneumonia identified by PCR: *M. haemolytica*, *P. multocida*, *Mycoplasma bovis* and *H. somni*. A diagnosis of severe pneumonia was made.

MISCELLANEOUS

Omphalophlebitis (Navel ill) complex

Athlone RVL examined a one-month-old calf with a history of having stopped suckling the previous day. Its temperature was normal, and the calf was given two litres of fluid orally and antibiotics, but didn't improve and died the next morning. The abdomen was distended, the umbilicus was enlarged and there was a distended haemorrhagic tract containing pus and necrotic material extending from the navel caudally along the urachus and umbilical vessels to the urinary bladder. There was a diffuse fibrinous peritonitis with adhesions between loops of intestine. There was also consolidation of the tips of the anteroventral lung lobes bilaterally. The joints were unremarkable. *Escherichia coli* was isolated from several tissues. A diagnosis of peritonitis secondary to an umbilical infection was made.



Figure 8: Fibrinous peritonitis and haemorrhagic urachus (arrow) both subsequent to navel infection in a calf. Photo: Denise Murphy.

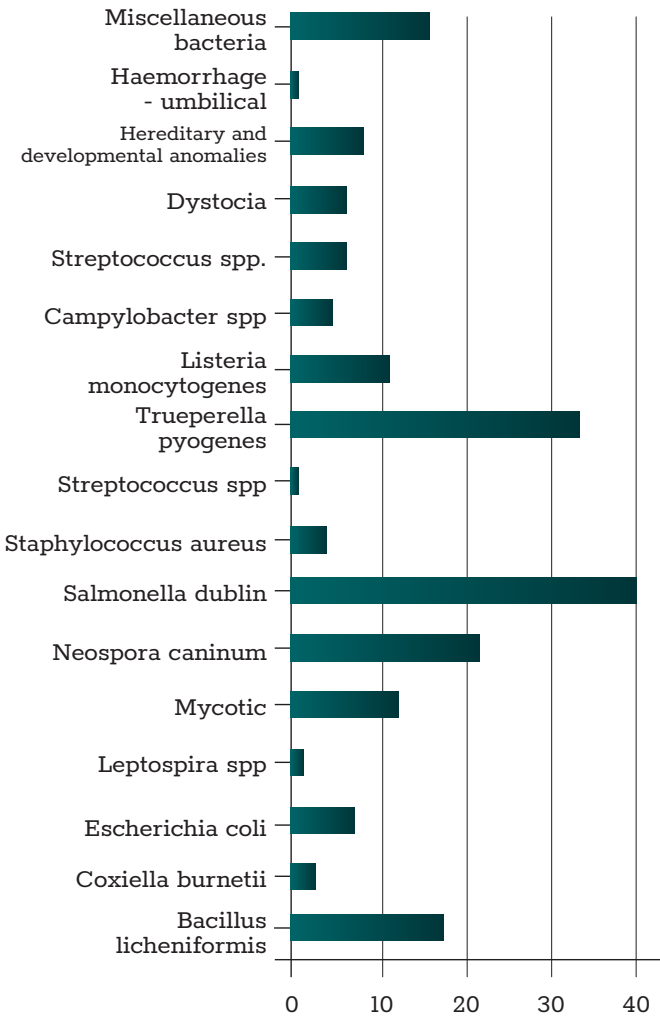


Table 2: The most commonly detected causes of abortion in bovines during the fourth quarter (October to December) of 2022.

URINARY/REPRODUCTIVE TRACT

Causes of abortion Q4 2022

In the fourth quarter of 2022, Salmonella Dublin, *Trueperella pyogenes* and *Neospora caninum* were the most commonly detected infectious causes of abortion in bovines. Detection rates for *N. caninum* have improved due to the recent availability of an in-house PCR test for this protozoan. Detection of bacterial abortifacients is most commonly by means of culture. Examination of aborted foetuses is primarily aimed at detecting infectious causes of abortion; non-infectious causes of abortion such as trauma or stress may not leave any signs in the foetus and may be a diagnosis of exclusion once infectious agents have been ruled out. Causes of abortion outbreaks may be difficult to detect, and as many sources of data as possible should be submitted. This includes all aborted foetuses with placenta (if available), and blood samples from all aborting dams and from cohorts.

SHEEP

Parasitic gastroenteritis and pneumonia were the most common diagnoses at necropsy in sheep in the RVLs during November 2022.

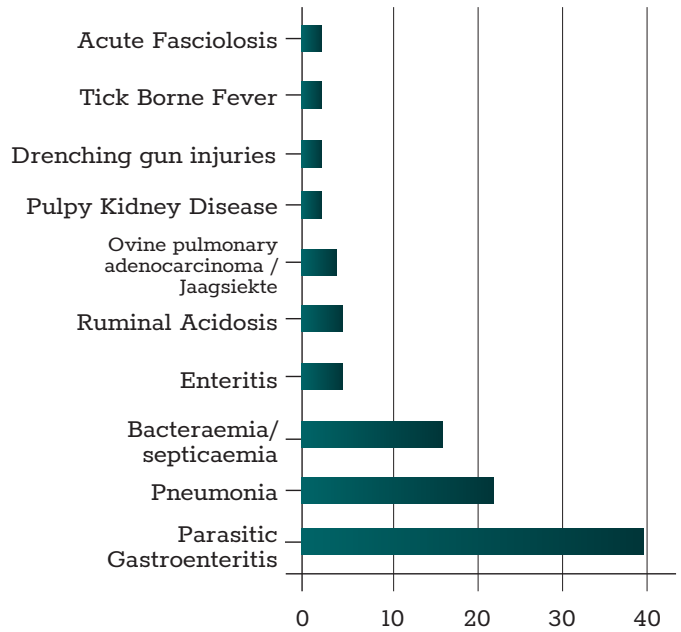


Table 3: The most common diagnoses in sheep submitted for necropsy in November 2022.

GASTROINTESTINAL TRACT

Parasitic gastroenteritis

An eight-month-old lamb with a history of diarrhoea and ill-thrift was submitted to Kilkenny RVL. There were two further losses from a group of 110. On necropsy, the lamb was very dehydrated, and there was marked faecal staining on the hind quarters. Lungworms were visible in the trachea. The intestinal contents were very fluid, and the intestinal walls appeared more translucent than normal. There were raised pinpoint foci on the mucosal surface of the abomasum. A strongyle count of almost 4,000EPG was recorded and a diagnosis of parasitic gastroenteritis was made. Lungworm in sheep is caused by a different species of parasite to the disease in cattle and there are usually no clinical signs. Coughing and weight loss may occur in heavy infestations, but this is not common. Treatment for ovine lungworm is also rarely necessary. It is typically effectively controlled by the treatments used in the management of gastrointestinal worms so the presence of lungworm in sheep may indicate that parasite control in the flock should be reviewed.



Figure 9: Lungworm in the trachea of a sheep. Photo: Aideen Kennedy.

Athlone RVL examined two eight-month-old lambs that had been sick for approximately two days with a rapid loss

in condition and scouring. There had been four similar losses recently. Body condition was moderate-to-poor with bodyweights of 32kg. Both lambs had faecal soiling on the tail and perineum and scant, loose intestinal contents and faeces. There were fibrin-covered ulcers on the tongue and the oesophagus, and diffuse pulmonary congestion. *B. trehalosi* was isolated from the lesions and lungs by culture and detected by PCR. Both lambs had extremely high strongyle egg counts in the faeces, of 18,000 and 25,000EPG respectively. A diagnosis of septicaemia caused by *B. trehalosi* (systemic pasteurellosis), and parasitic gastroenteritis (PGE) was made.

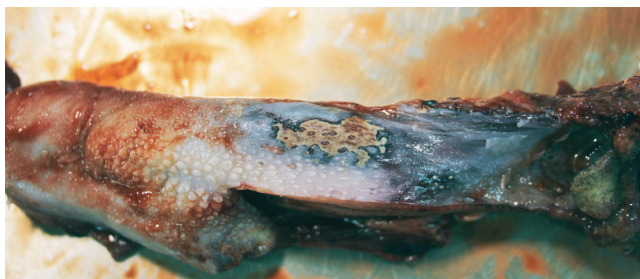


Figure 10: An ulcer on the tongue from which *Bibersteinia trehalosi* was cultured. Photo: Denise Murphy.

Rumen acidosis

Sligo RVL carried out a necropsy on a store lamb that had died suddenly. Six other lambs had died recently. Lambs had been purchased from various sources and housed where they were offered *ad lib* concentrates with little or no roughage. The ruminal contents contained large amounts of partially digested grains. The rumen pH was 4.8, confirming acidosis. It is not uncommon for multiple deaths to occur in housed lambs following introduction of *ad lib* concentrate.



Figure 11: Grain-filled rumen in a lamb with ruminal acidosis. Photo: Shane McGettrick.

Acute fasciolosis

Sligo RVL diagnosed numerous cases of acute fasciolosis in sheep during November 2022. Ages affected included adult sheep and lambs. Generally, cases presented as sudden death in individual animals and increased mortality in groups. In many cases, there had been a history of routine treatment with a flukicide, leading flock owners to assume liver fluke was not the reason for deaths. Further analysis of dosing history revealed, however, that treatments used were timed

inappropriately, or not used correctly. In most cases, the exposure of animals to land that was heavily contaminated by infective fluke larvae was considered the most important risk factor identified. Possible reasons that routine strategies for fluke control were less effective this year included a relatively mild, wet autumn where the grass supply remained plentiful, leading to increased grazing of fluke infested pastures later in the year, and a possible increase in flock sizes on some farms. Resistance was not confirmed as a contributory factor in any of the cases, but flock owners were advised to discuss fluke control strategies specific to their farms and management practices with their vets, including use of tests to assess fluke risk and detect possible drug resistance. Liver fluke control in wetter parts of the country is a significant challenge in the face of increasing intensification of flocks, reduced usage and efficacy of flukicides, and variable climatic conditions.



Figure 12: Severe acute fasciolosis in an ovine liver with multifocal haemorrhagic tracts throughout the hepatic parenchyma and aberrant flukes present on the hepatic serosa (top right). Photo: Shane McGettrick.

RESPIRATORY TRACT

Pneumonia and septicaemia

A six-month-old hogget was found dead and submitted to Kilkenny RVL. There had been 13 deaths in the flock over a period of a few days. On gross examination, the lungs were congested and there was a marked fibrinous oesophagitis. *B. trehalosi* was cultured from multiple organs suggesting a bacteraemia/septicaemia. Positive PCR results were obtained for *M. haemolytica*, *P. multocida* and *B. trehalosi*. Faecal egg counts were moderate in this lamb but other samples from the flock reported high egg counts which may have contributed to an underlying immunosuppression. *B. trehalosi* is a common and important pathogen of sheep that predominantly causes acute systemic infection and death in growing lambs in the autumn and winter.



Figure 13: Oesophagitis in a hogget from which *Bibersteinia trehalosi* was cultured. Photo: Aideen Kennedy.

CARDIOVASCULAR SYSTEM

Vegetative endocarditis

A four-year-old ewe was submitted to Kilkenny RVL with a history of ill-thrift. Other cases of ill-thrift were reported in the flock. On examination, there was a vegetative endocarditis with abscessation extending into the atrial wall of the heart. The lungs were heavy and congested with areas of embolic pneumonia. The intestinal contents were very fluid. *T. pyogenes* was cultured from the heart, lungs and liver suggesting a bacteraemia. A very high egg count of over 20,000EPG was recorded and faecal samples from cohorts were recommended given the history of ill-thrift in other animals.

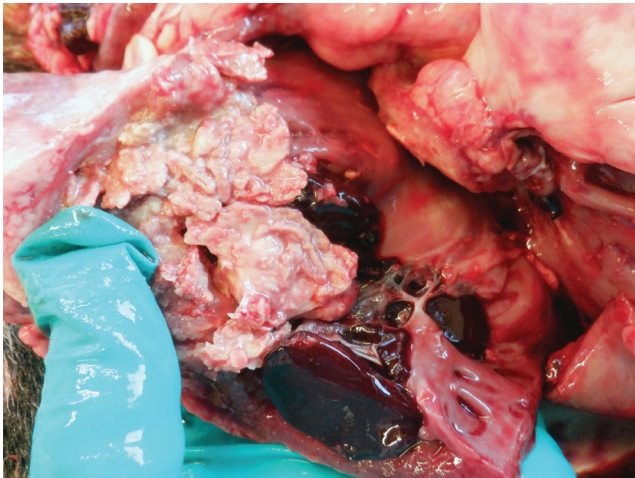


Figure 14: Vegetative endocarditis on the atrial wall of a ewe's heart. Photo: Aideen Kennedy.