

# Regional Veterinary Laboratories Report

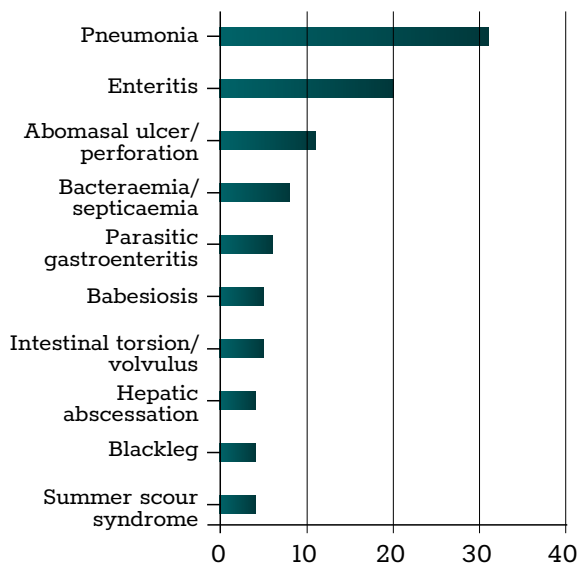
June 2023

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 314 carcasses and 28 fetuses during June 2023. Additionally, 1,736 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 June 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 June 2023.



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

## GASTROINTESTINAL TRACT

### Coccidiosis

A four-month-old calf was submitted to Limerick RVL with a history of scour and dullness. Severe dehydration was evidenced by ophthalmos. There was thickened small intestinal mucosa and fluid small intestinal contents. Histopathology disclosed a very severe enteritis; multiple life stages of coccidia were seen in the mucosa of some sections. A McMasters test on caecal contents disclosed coccidial oocysts suggesting a severe infection. A diagnosis of coccidial enteritis was made.

### Perforated abomasal ulcer

A six-week-old calf was submitted to Kilkenny RVL. The calf had been lethargic and had failed to respond to treatment. On necropsy, there was multifocal, fibrinous peritonitis. The source of the peritonitis was a perforated abomasal ulcer.

There were additional, multifocal, shallow abomasal ulcers and moderate oedema of the abomasum folds. On histopathology of the abomasum, there was an abomasitis with fungal hyphae and *Sarcina* sp. bacteria visible. Gross findings usually associated with *Sarcina* sp. include emphysema and oedema of the abomasal wall, mucosal hyperaemia and haemorrhage, and rupture of the abomasum. Mycotic infections are typically opportunistic.



**Figure 1: A perforated abomasal ulcer and fibrin tags due to the subsequent peritonitis. Photo: Aideen Kennedy.**

A two-month-old suckler calf was submitted to Limerick RVL from a 10-cow suckler herd. With a history of having been found dead. Necropsy disclosed a perforated abomasal ulcer and acute peritonitis.



**Figure 2: A perforated abomasal ulcer in a calf which led to a peritonitis. Photo: Alan Johnson.**

### Haemorrhagic abomasal ulcer

A five-year-old cow died suddenly and was submitted to Kilkenny RVL. There was generalised pallor to the carcase. There was a large blood clot in the abomasum. There was a moderate depth abomasal ulcer with an exposed blood vessel (the source of haemorrhage). There were additional multifocal shallow ulcers in the mucosa of the abomasum. The intestinal content was dark black (melaena).

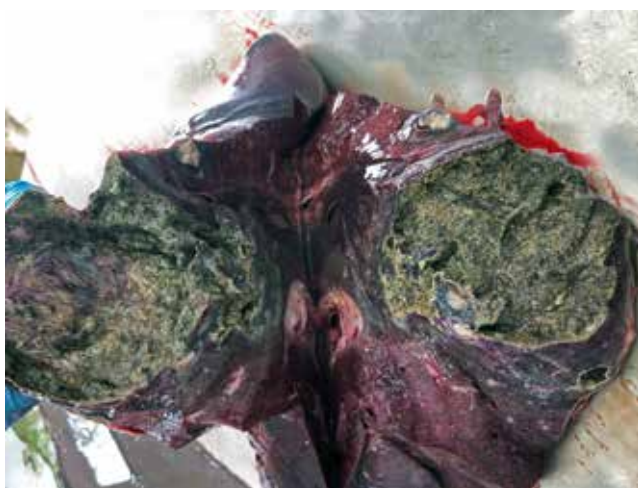


**Figure 3: An abomasal ulcer with an exposed blood vessel. Photo: Aideen Kennedy.**

### Omphalophlebitis

A six-day-old calf was submitted to Sligo RVL with a history of swollen joints that started at one day of age, initially involving the hind quarters, then developing to all four quarters. Before death, the calf presented with dyspnoea and inability to walk as well as joint pain when touched. The farmer reported several similar cases currently on the farm which had been improving under veterinary treatment. On post-mortem examination, there was fibrinous polyarthritis and sepsis associated with a fulminant omphalophlebitis. *Escherichia coli* was isolated systemically. This case illustrates the importance of umbilical hygiene in neonatal calves involving both umbilical treatment as well as a clean calving area.

A six-week-old Limousin suckler calf was submitted to Limerick RVL after it collapsed with neurological signs and did not respond to treatment. The herd had similar cases this year and in previous years. A herd investigation previously identified mineral deficiencies. On external examination, there was a markedly swollen umbilicus and on opening the carcase there was an umbilical abscess tracking up to the liver; the liver was adhered to the diaphragm and contained one large fist-sized abscess and multifocal small abscesses on the surface and in the body of the liver. Hepatic copper, cobalt and manganese concentrations were below the normal range. Severe omphalitis (imbilical infection) and hepatic abscessation was diagnosed. Advice was given to conduct a review of umbilical dressing and hygiene around calving, and to recommend a mineral audit of feed and blood testing of animals of different ages and stages of production.



**Figure 4: A hepatic abscess in a calf arising from an omphalitis. Photo: Brian Toland.**

A week-old Limousin suckler calf had appeared to recover after dystocia but was found dead. Necropsy at Limerick RVL revealed an umbilical infection tracking to the liver and generalised peritonitis. Zinc sulphate turbidity (ZST) level was seven units; values less than 12 units are interpreted as inadequate, evidently colostrum feeding had not been successful. *E. coli* was cultured from multiple organs.

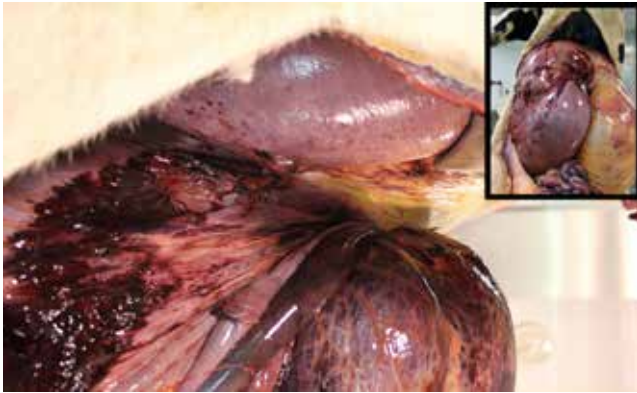


**Figure 5: Peritonitis in a calf arising from an omphalitis. Photo: Brian Toland.**

### Abomasal volvulus

Athlone RVL examined a four-year-old Friesian cow with a history of having been found recumbent, it was slow to stand and became recumbent again later that day, was treated with oxytetracycline with no response and died shortly afterwards. On gross post-mortem examination, there was mild to moderate bilateral enophthalmia. The abdomen was distended due mainly to gaseous and bloody fluid distension and volvulus of the abomasum. The serosa of the abomasum and reticulum were red and the abomasal mucosa was black and necrotic. The liver and lungs were pale, and the

mammary gland and uterus were unremarkable. A diagnosis of abomasal displacement and volvulus was made.



**Figure 6: The constriction and site of torsion of an abomasum which had suffered volvulus and distension (inset). Photo: Denise Murphy.**

### DISPLACED ABOMASUM AND ABOMASAL VOLVULUS

The aetiology of displaced abomasum and abomasal volvulus is multifactorial, although decreased abomasal emptying by abomasal hypomotility and/or dysfunction of the intrinsic nervous system are thought to play an important role. Important contributing factors include abomasal hypomotility associated with hypocalcaemia and hypokalaemia, as well as concurrent diseases (mastitis, metritis) associated with endotoxaemia and decreased rumen fill, periparturient changes in the position of intra-abdominal organs, and genetic predisposition, particularly in deep-bodied cows.

### Summer Scour

Kilkenny RVL has received a number of submissions that had post-mortem findings suggesting 'summer scour' as a key differential diagnosis: upper alimentary tract ulceration together with a history of a scour and weight loss in weaned calves less than 12 months of age, on a grass-based diet where other common causes of diarrhoea in this aged animal have been excluded e.g., parasitism including coccidiosis, salmonellosis, molybdenum and copper issues, and where removal from grass i.e., re-housing has resulted in a positive response in the group of calves.

The RVLs remain interested in investigating these suspected summer scour cases and it is important to exclude the other causes of the lesions seen so that the right treatment is given.



**Figure 7: Ulceration of the oesophageal mucosa. Photo: Maresa Sheehan.**

## RESPIRATORY TRACT

### Pneumonia

Limerick RVL received a 13-month-old Limousin-cross heifer for necropsy, the animal had been at pasture with a group. Emphysema, pleuritis and pneumonia were observed. No lungworm larvae were seen in the airways. Routine culture yielded no significant growth. Polymerase chain reaction (PCR) testing was positive for *Pasteurella multocida* only.

## URINARY/REPRODUCTIVE TRACT

### Nephritis

A three-month-old calf was submitted to Kilkenny RVL with a history of respiratory signs. On examination, there was cranioventral consolidation affecting approximately 40 per cent of the lung tissue, and adhesions between the pleura and pericardium. The capsule was difficult to remove on both kidneys and there were multifocal white lesions on both kidneys. *Trueperella pyogenes* and *E. coli* were cultured from multiple organs indicating a bacteraemia. PCR tests were also positive for *Mycoplasma bovis*, *Mannheimia haemolytica*, parainfluenza virus 3 (PI3) and *P. multocida*.



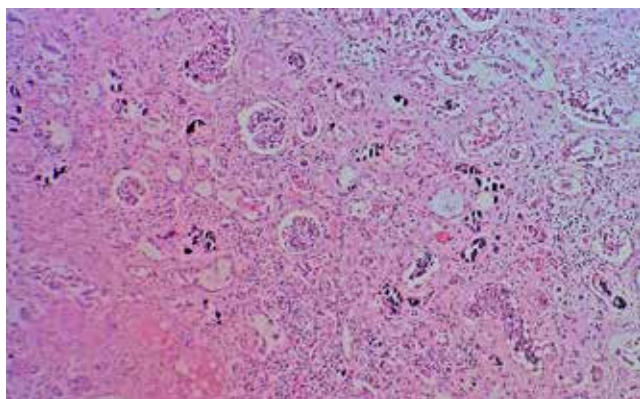
**Figure 8: "White-spotted kidneys" in a case of bovine nephritis. Photo: Aideen Kennedy.**

A 10-week-old calf was presented to Kilkenny RVL with a history of sudden death. On post-mortem examination, the kidneys were very pale with multifocal white spots visible on the renal serosal surface. *Salmonella* Typhimurium was isolated on culture. This is a potent zoonosis and stringent precautions are indicated to prevent human infection. *S. Typhimurium* has a very different epidemiology to *Salmonella* Dublin, which is key to understanding, investigating and controlling outbreaks. Transmission is mostly by the typical *Salmonella* faecal-oral route, but foetal materials and placentae are also high-risk materials and need to be carefully handled and responsibly disposed of. Ruminants are atypical hosts, and the disease usually has a monogastric source (poultry, pigs, wild birds or a rodent infestation). When the source is identified and removed, outbreaks are often self-limiting, with appropriate treatment of clinical cases and no specific prophylactic measures. The carrier state (familiar with *Salmonella* Dublin) is not really a feature of *S. Typhimurium* in ruminants, and faecal shedding lasts for days or weeks rather than weeks or months.



**Figure 9: Renal lesions due to infection with *Salmonella Typhimurium*.**  
Photo: Lisa Buckley.

A 10-week-old calf was presented to Kilkenny RVL with rapid deterioration despite treatment. On post-mortem examination, the kidneys were very pale and firm. On histopathological examination, there was a severe, diffuse chronic active tubular and interstitial suppurative nephritis with extensive fibrosis and calcification. There were also multifocal areas of necrosis and non-suppurative inflammation in the liver suggestive of a Gram-negative bacteraemia/septicaemia. Although not isolated on culture, salmonellosis was a key differential for the histopathological changes seen.



**Figure 10: Renal lesions of tubular and interstitial suppurative nephritis with extensive fibrosis and calcification.** Photo: Lisa Buckley.

### Cystitis

Sligo RVL received a two-month-old calf which had been found not suckling, apparently constipated, showing tenesmus, which died despite treatment attempts. On post-mortem examination, the calf was in good condition and was well preserved but uraemic and dehydrated. There was a ruptured bladder associated with chronic-active urachitis and cystitis.

## CARDIOVASCULAR SYSTEM

### Mesenteric haemorrhage

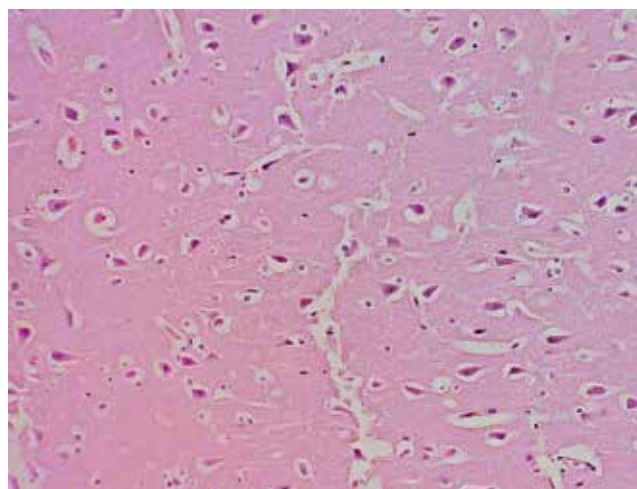
A 12-year-old cow was submitted to Kilkenny RVL; she had become recumbent, and a cardiac problem was suspected. On examination, there was pallor of the carcass. There was a very large blood clot in the mesentery. The precise source of the haemorrhage could not be identified due to the large volume of blood but common causes of haemorrhage in this location

in cows can include an aortic aneurysm or rupture of a large vessel.

## NERVOUS SYSTEM

### Cerebrocortical necrosis

A five-month-old weanling was presented to Kilkenny RVL with a history of neurological signs prior to death. On post-mortem examination, the surface of the cerebral gyri appeared swollen in segments. There was fluorescence of the brain under Wood's lamp (ultra-violet light) suggesting cerebrocortical necrosis. On histopathology, multifocally there was moderate-to-marked neuropil rarefaction and vacuolation, a segmental polioencephalomalacia. Currently, it is believed that polioencephalomalacia in ruminants can involve a wide range of pathogeneses, including toxic, metabolic, dietary/nutritional, and even infectious events. In addition to thiamine deficiency, some of the specific causes of polioencephalomalacia in ruminants include sulphur poisoning, lead poisoning, salt poisoning (water deprivation), administration of levamisole or thiamine analogues such as amprolium, and ingestion of thiaminase-rich plants.

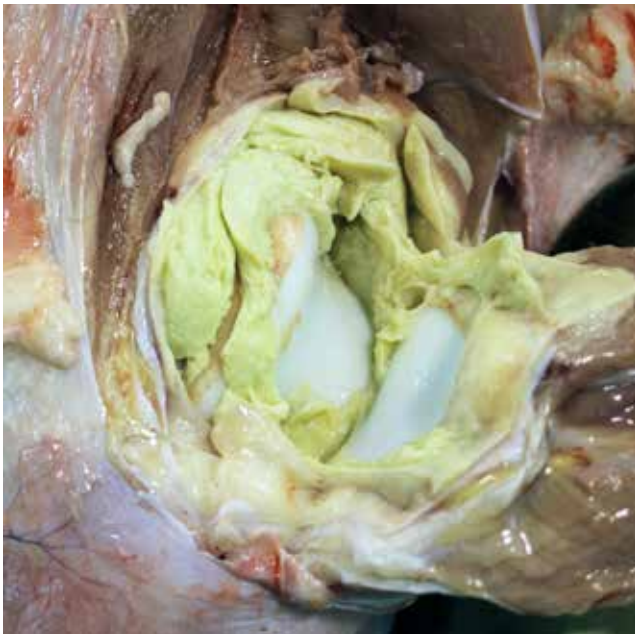


**Figure 11: Cerebrocortical necrosis (polioencephalomalacia) in a weanling brain.** Photo: Lisa Buckley.

## MUSCULOSKELETAL

### Fibrinous polyarthritis

Athlone RVL examined a ten-week-old calf with a history of having developed dyspnoea one month previously, was pyrexial with a nasal discharge, and was treated on and off during that month. There was no response to treatment and the calf was euthanised. On gross post-mortem examination, there was moderate pulmonary oedema and congestion, copious amounts of froth in trachea and a fibrin clot in the left bronchus and a 1-2cm focal area of necrosis in right caudal lung lobe. There was an abscess in the liver near the caudal vena cava and there was a severe fibrinous arthritis in the left stifle and both forelimb 'elbow' joints. The spleen was enlarged, and the umbilicus was unremarkable. *Aerococcus sp.* was isolated from several tissues. Histopathology of the lungs showed multifocal areas of mainly coagulative necrosis and smaller caseous necrotic lesions within a lobule and copious bacterial colonies. A diagnosis of liver abscessation with septic pulmonary emboli and fibrinous polyarthritis was reached.



**Figure 12: Fibrinous arthritis in a calf, a sequel to hepatic abscessation. Photo: Denise Murphy.**

## POISONINGS

### Lead poisoning

Sligo RVL diagnosed lead poisoning in two submissions in June 2023. Summer months are usually the peak season for lead poisonings in Ireland as the main lead sources nowadays are discarded car or tractor/quad batteries. They are often unnoticed in drains or under shrubbery where inquisitive animals might find them and accidentally ingest parts of the included lead mesh. Lead poisonings in livestock are of special interest due to their potential implications for public health through the food chain. It is important that lead-contaminated animal products cannot enter the food chain due to potential toxicity for humans, and the RVLs participate in a protocol with the Department's veterinary and dairy inspectorates to ensure this.

The first Sligo case involved a 14-month-old bullock which had been found dead. On post-mortem examination, fragments of lead mesh were found in the reticulum. Lead concentrations, measured in renal cortex, were well within the toxic range.

The second case concerned an eight-month-old weanling which also presented with sudden death and similar post-mortem and laboratory findings.

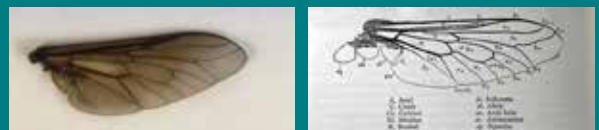
### INCREASED NUMBER OF 'WARBLE FLY LOOK-ALIKES' ON THE WING IN MUNSTER AND SOUTH LEINSTER THIS SUMMER

The Department of Agriculture Food and the Marine's Regional Veterinary Laboratories have reported a number of 'suspected warble fly' (*Hypoderma* spp) specimens presented for identification from the southern half of the country in recent weeks, many more than in recent years. In every case presented so far, these have been identified as large Tabanid flies (mainly *Tabanus sudeticus*), commonly called 'horseflies'.

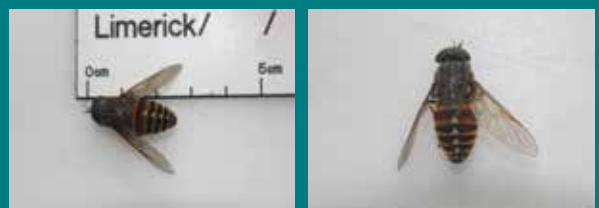
While these are not closely related to warble flies (which were eradicated from Ireland in the 1990s), these Tabanid flies are superficially similar to warble flies, as they are exceptionally large biting flies with similar markings and are capable of inflicting quite a painful bite on animals or humans. The combination of this bite and the ominous buzzing sound they make (very like a warble fly) can cause behavioural changes in cattle including restlessness, cover-seeking, and intermittent stampeding ('gadding'), all of which are very suggestive of warble fly activity. Before they were eradicated from Ireland, warble flies caused significant nuisance to Irish cattle, with physical injuries inflicted by accident (when animals were running from them), as well as the economic impact of warble larval damage on cattle skins for the leather trade.

The purpose of this note is to raise awareness of the similarity of large Irish Tabanid 'horseflies' to warble flies, and to provide reassurance that there is no evidence that warble flies have returned to plague Irish cattle. However, as with any exotic pathogen, it is also important to remain vigilant. The Department is grateful for the ongoing vigilance of Irish farmers and vets and their alertness to the possibility of warble flies being reintroduced, and especially thankful to those who submitted suspected specimens for identification this summer.

Any suspected warble fly specimens (whether flies, or larvae recovered at PM/slaughter) can be submitted through a veterinary practitioner to the nearest Regional Veterinary Laboratory for definitive identification by our veterinary parasitologist in Backweston. Veterinary practitioners are reminded that such specimens should be identified to location where the specimen was collected (herd number), preserved in a universal tube in 70 per cent alcohol, and packaged properly.



**Figure 13: Wing from a submitted Tabanid horsefly (specimen submitted to Kilkenny RVL), compared with a textbook illustration showing the characteristic wing vein pattern (wing diagram taken from *Helminths, arthropods and protozoa of domesticated animals* by E.J.L. Soulsby). Photos: Aideen Kennedy.**



**Figure 14: Tabanid fly specimen submitted to Limerick RVL (from a Co. Clare farm, June 26, 2023) – note the large size. Photos: Alan Johnson.**

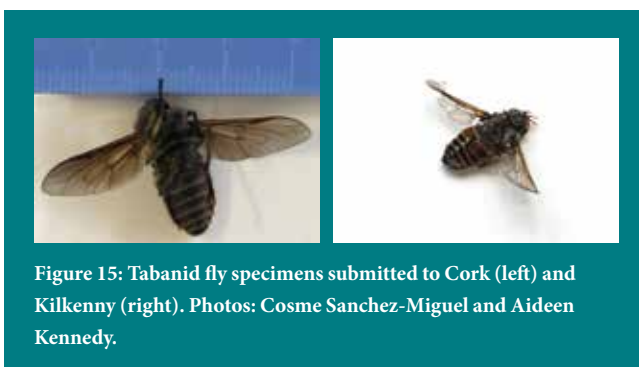


Figure 15: Tabanid fly specimens submitted to Cork (left) and Kilkenny (right). Photos: Cosme Sanchez-Miguel and Aideen Kennedy.

**SHEEP**

Bacteraemia/septicaemia and parasitic gastroenteritis were the most common diagnoses at necropsy in sheep in the RVLs during June 2023.

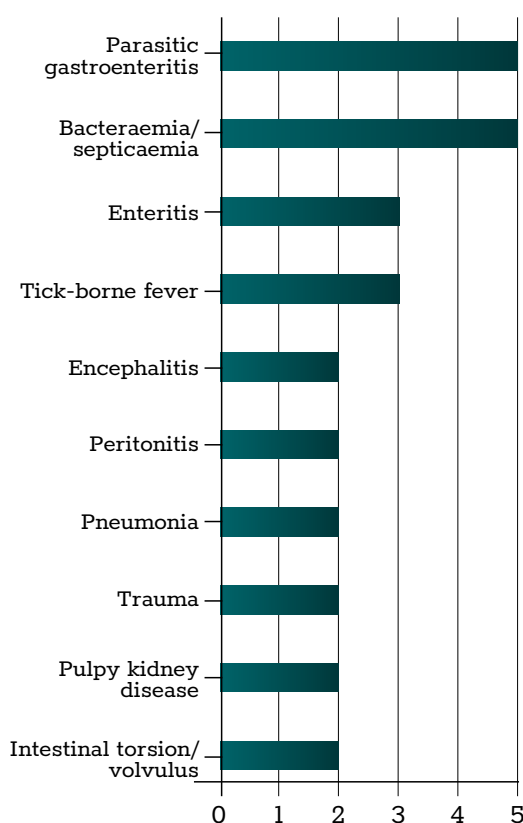


Table 2: The most common diagnoses in sheep submitted for necropsy in June 2023.

**NERVOUS SYSTEM**

**Meningitis**

Sligo RVL examined a three-month-old lamb which had been found dead. On post-mortem examination, there was a purulent meningitis visible at the base of the brain. Unfortunately, a causative pathogen was not identified due to the advanced autolysis of this carcass.

A four-year-old ewe was euthanised and submitted to Kilkenny RVL to investigate a suspect meningitis. On examination of the brain, there were multiple suspect foci of necrosis in both cerebral hemispheres and the cerebellum. The meninges appeared cloudy. Findings on the remainder of the carcass included very liquid intestinal contents. *Bibersteinia trehalosi*

was cultured from the lungs and liver. *Staphylococcus* sp. was also cultured. Based on histopathology findings of a severe multifocal meningoencephalitis with large colonies of bacteria, a role for tick-borne fever (TBF) was further investigated, but tests proved negative. A very high strongyle count was recorded on McMaster examination and nematode worms were visible in the abomasum histology, and faecal samples from cohorts/a review of parasite control was advised.

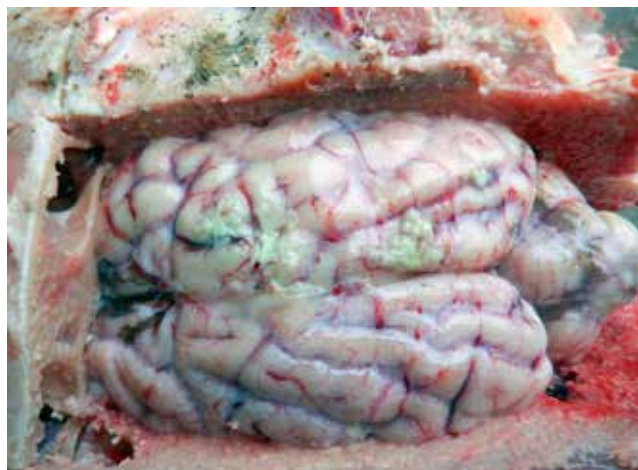


Figure 16: Multiple foci of necrosis on the cerebral hemispheres in a ewe with meningoencephalitis. Photo: Aideen Kennedy.

**MUSCULO-SKELETAL**

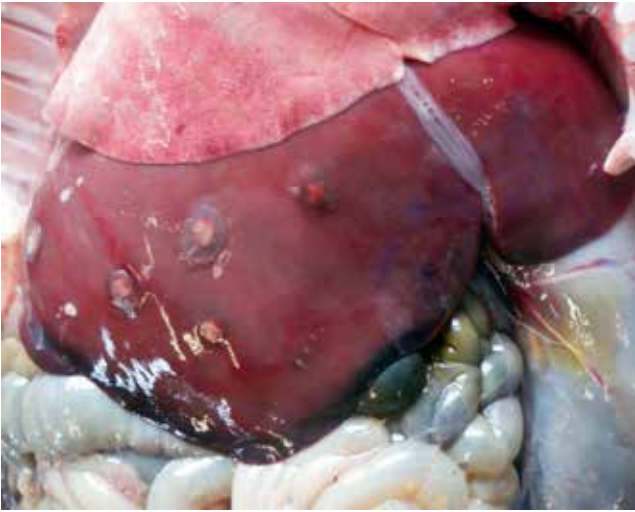
**Blackleg**

Sligo RVL diagnosed blackleg in a two-month-old lamb. The lamb was noticed on the day prior to death with a swollen head and neck. On post-mortem examination, there was severe dehydration and myositis, with very dry and oedematous foci, was present in the cranial portion of the neck and the tongue. *Clostridium chauvoei* was detected by fluorescent antibody technique (FAT) in the lesions.

**MISCELLANEOUS**

**Tick pyaemia**

A three-week-old lamb 'pined away' before death and was submitted to Kilkenny RVL. There had been multiple cases in the flock. On examination, the lamb was very dehydrated and there was faecal staining on the hindquarters. There was multifocal hepatic abscessation and the kidneys were pale. *Staphylococcus aureus* was cultured from multiple organs, indicating a bacteraemia. PCR tests for *Anaplasma phagocytophilum*, the causative organism of tick-borne fever (TBF) were positive. Staphylococcal infections can occur secondary to *A. phagocytophilum* infection in cases of tick pyaemia. Tick-borne fever (TBF) is a rickettsial disease affecting the white blood cells of ruminants. The disease is transmitted by the tick *Ixodes ricinus*. The causative agent *A. phagocytophilum* infects eosinophils, neutrophils and monocytes. The impairment of humoral and cellular defences may increase susceptibility to tick pyaemia, pasteurellosis, louping ill and listeriosis. Tick pyaemia affects lambs two to 12 weeks of age and is characterised by debility, lameness, and paralysis. Purulent abscesses are common in joints but may be found in virtually any organ because of pyaemic spread.



**Figure 17: Multifocal hepatic abscessation in a lamb with tick pyaemia. Photo: Aideen Kennedy.**

### Deformity

Sligo RVL examined a two-month-old lamb which had been noticed with loss of weight and body condition in the weeks prior to death. The farmer noticed that the animal seemed to ruminate frequently and to regurgitate regularly after sucking the ewe. On necropsy, the oesophagus cranial to the heart was filled with ingesta and dilated. Thereafter, the oesophagus was constricted by a *ligamentum arteriosum*. *Ligamentum arteriosum*, also called persistent right aortic arch, is a relatively rare congenital defect, which has been described as the most common vascular ring anomaly in dogs, but also infrequently in cats, cattle and horses. The lamb was likely to have been able to consume liquid milk normally, but the problem only became apparent when food changed to grass and rumination began.

### ALPACAS

#### Tuberculosis

Athlone RVL examined a three-year-old alpaca that was due to calve in another three weeks. She had been found recumbent, was treated by the vet but there was no response to treatment, and she died the next evening. The carcass preservation was moderate and the body condition was poor, with a bodyweight of 69kg. There was severe, bilateral, anteroventral, pulmonary consolidation and diffuse caseous lesions on cross section. There was similar caseation of the bronchial and mediastinal lymph nodes. There were fibrin strands on the hepatic and splenic surfaces, and blood-tinged ascitic fluid. The gastrointestinal tract was unremarkable. Histopathology of the lung and lymph node described a severe multifocal granulomatous pneumonia and lymphadenitis. Samples of lung and lymph node were cultured for TB and *Mycobacterium bovis* was isolated from both the lymph node and the lung lesion confirming a diagnosis of TB. *Mycobacterium bovis* is a slow-growing organism, often taking eight weeks or longer to grow. In this case, the

organism grew within three weeks indicating a heavy bacterial load.



**Figure 18: Caseous lesions in the lungs of an Alpaca from which *Mycobacterium bovis* was cultured. Photo: Denise Murphy.**