

# REGIONAL VETERINARY LABORATORIES REPORT

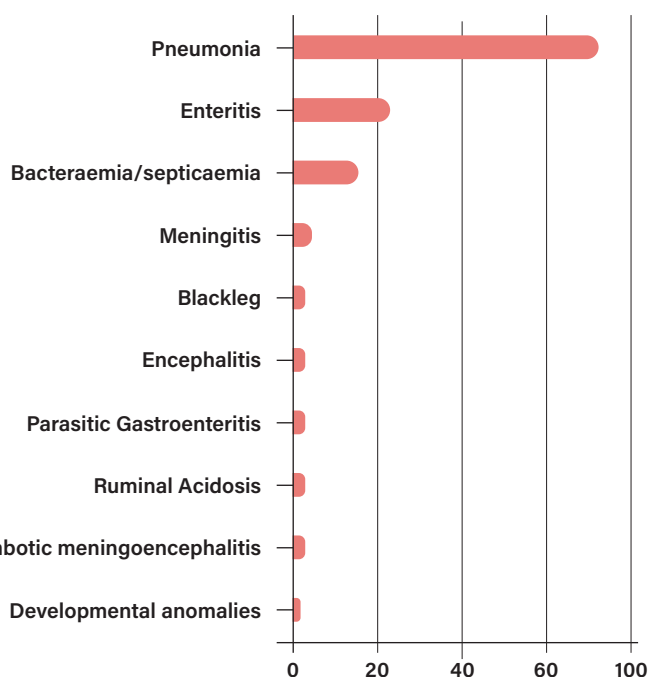
December 2023

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 529 carcasses and 264 fetuses during December 2023. Additionally, 1,336 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 December 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 December 2023.



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

## Gastrointestinal Tract

### Haemorrhagic enteritis

An eight-month-old weanling was found dead with no previously noticed signs and submitted to Kilkenny RVL. There had been five previous deaths in the herd. On necropsy, the main findings were severe dehydration, bloody intestinal contents, and oedema in the intestinal walls, with occasional shallow ulcers on the intestinal mucosa. *Yersinia pseudotuberculosis* was cultured from these lesions. On histopathology of the intestine, there was a suppurative enteritis with a myriad of large colony-forming intralumenal bacteria; the changes were consistent with the isolation of *Y. pseudotuberculosis*. *Y. pseudotuberculosis* is a gram-negative member of the Enterobacteriaceae. The organism can survive for long periods in cool, wet conditions. It has been isolated from a wide variety of birds, wild mammals and

domestic animals which may provide a reservoir of infection. Clinical signs can include sudden death or the acute onset of watery diarrhoea. Mortality may be high. The epidemiology is complex and poorly understood. The organisms may be shed in the faeces of asymptomatic carrier animals, and by rodents and birds. It is potentially zoonotic.



**Figure 1:** Bloody intestinal contents from which *Yersinia pseudotuberculosis* was cultured. Photo: Aideen Kennedy.

### Fibrinous peritonitis

An eight-month-old weanling with a history of abdominal bloat was submitted to Kilkenny RVL. There was fibrinous peritonitis with approximately five litres of fluid in the abdominal cavity. The abomasum wall was very friable. A large section of the abomasum appeared devitalised and the possibility of a previous partial torsion of the abomasum could not be excluded. In addition, *Clostridium septicum* fluorescent antibody technique (FAT) results were positive, and a review of vaccination protocols was advised.



**Figure 2:** Congested and friable abomasal wall from a weanling; the possibility of a previous partial torsion of the abomasum could not be excluded. Photo: Aideen Kennedy.

### Abdominal fat necrosis

Athlone RVL examined an eight-year-old Friesian cow with a history of ill-thrift, inappetence and tenesmus. The submitting vet suspected a rectal tumour. The fat surrounding sections of the small intestine, the spiral colon, and the rectum was hard and thickened. Histopathology of the gross lesion showed adipose tissue necrosis with dystrophic calcification and a multifocal granulomatous response. A conclusion of abdominal fat necrosis was reported. Abdominal fat necrosis is most commonly found in the Channel Island breeds, Japanese Black cattle, and beef cattle grazing fescue for long periods. Clinical signs are uncommon; however, in some cases they can cause an extraluminal intestinal obstruction resulting in moderate abdominal pain, tenesmus, and decreased faecal production.



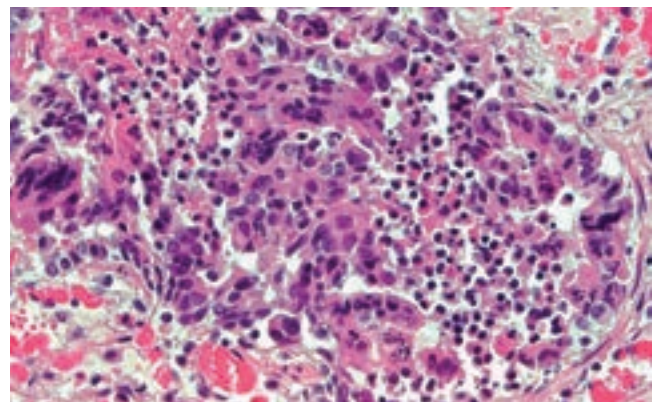
**Figure 3:** Abdominal fat necrosis with dystrophic calcification in which a granulomatous response was evident upon histopathology. Photo: Denise Murphy.

## Respiratory Tract

### Pneumonia

Athlone RVL examined a two-month-old calf that had been found panting and was treated by both the herd owner and the vet but died two days later. There was bilateral, caudo-dorsal, pulmonary interlobular emphysema with emphysematous bullae, and the lungs had a meaty consistency. No lungworm were observed. There was also some anteroventral consolidation, and the tracheal mucosa was hyperaemic. Bovine respiratory syncytial virus (BRSV) was detected in the lungs by polymerase chain reaction (PCR) and *Pasteurella multocida* was isolated on culture. Histopathology of the lungs showed diffuse alveolar damage, type 2 pneumocytosis and syncytial cells were seen. There were small multifocal areas of suppurative bronchiolitis. The interstitial pneumonia pattern seen was consistent with viral pneumonia and a conclusion of viral pneumonia caused by BRSV was reached.

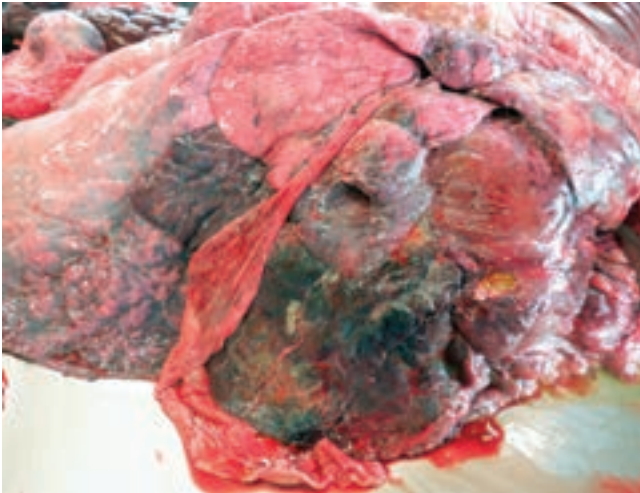
Sligo RVL diagnosed several cases of multifactorial pneumonia in December 2023. In one case, two seven-month-old weanlings with a history of panting were presented to the RVL for post-mortem examination. There had been three further deaths in the group recently. On necropsy, both animals presented similar findings. The lung presented with cranioventral consolidation affecting approximately 30 to 50 per cent of the parenchyma. There was catarrhal exudate in the airways and there was fibrinous interlobular exudate and significant subpleural emphysema. Histopathology of lung sections also yielded similar results in both cases. There was chronic-active, eosinophilic broncho-interstitial pneumonia with giant cells, bronchiolitis obliterans and occasional nematode larvae. There was marked acute necrotising bronchiolitis with syncytial cells present throughout. *Mannheimia haemolytica* and *P. multocida* were detected in the lesions. The cause of death in both animals was severe pneumonia. Based on the gross appearance and histopathology, lungworm were present and had caused chronic damage. A more recent BRSV infection had caused acute changes in the airways and facilitated a bacterial infection causing the death. Lungworm control and respiratory virus control were considered necessary.



**Figure 4:** Necrotic airway epithelium with syncytial cells in a case of RSV in a weanling. Photo: Shane McGettrick.

Two weanlings with respiratory signs were submitted to Kilkenny RVL. Others in the herd were also showing respiratory signs. In one animal, there was cranioventral

consolidation of approximately 40 per cent of the lung volume. There were small numbers of lungworm visible in the lower airways. In the second animal there was a fibrinous pleuritis and pneumonia, with approximately 40 per cent of the lung tissue consolidated. Caudally, the lungs were overinflated. *M. haemolytica* and *P. multocida* were cultured from both. Additionally, PCR positive results for *Mycoplasma bovis*, *Histophilus somni*, bovine coronavirus and BRSV were obtained. A review of respiratory disease control, including lungworm control, was recommended.



**Figure 5:** Fibrinous necrotising pneumonia from which *M. haemolytica* and *P. multocida* were cultured. Photo: Aideen Kennedy.

### Pneumonia and arthritis

Two nine-month-old weanlings from the same holding were submitted to Sligo RVL. One of the animals had a history of treatment for suspected pneumonia and a swollen hock joint, the other was observed dull and sluggish on the day prior to death. The first animal presented on post-mortem exam with purulent arthritis in the left hock joint. There was also cranio-ventral consolidation of the lung with purulent foci and mild-to-moderate tracheitis. Post-mortem examination of the second animal presented with well-demarcated cranio-ventral consolidation of the lungs and moderate to severe tracheitis. Histopathology of both animals had similar results. There was diffuse, chronic, severe, suppurative bronchopneumonia with partial loss and attenuation of bronchial epithelium and bronchiolitis obliterans. Necrotic debris was present in some alveolae and bronchioles. Septae were expanded with fibrin. *Mycoplasma bovis* was detected in both lungs and the arthritic joints.

Pneumonia and arthritis due to *Mycoplasma bovis* were diagnosed as cause of death.

### Acute fibrinous pleuropneumonia in adult dairy cows

The RVLs see a number of cases of severe fibrinous pleuropneumonia and pericarditis in adult dairy cows during the calving/transition period, where *Mannheimia haemolytica* is isolated. Typically, this is seen in younger animals during times of stress such as weaning, transportation, dietary changes, weather changes, and overcrowding.

However, reports of acute pleuropneumonia in dairy

cows, associated with *Mannheimia haemolytica*, have increased in Europe in the last number of years (Biesheuvel *et al*, 2021) and sometimes these are associated with stressful conditions. The picture shows severe fibrinous pleuritis and pneumonia from an adult cow with *M. haemolytica* cultured from multiple organs.

### Reference

M.M. Biesheuvel, G. vanSchaik, N.M. Meertens, N.H. Peperkamp, E. van Engelen, E. van Garderen Emergence of fatal *Mannheimia haemolytica* infections in cattle in the Netherlands, *The Veterinary Journal*, 268 (2021), Article 105576



**Figure 6:** Fibrinosuppurative pleuropneumonia typical of *Mannheimia haemolytica* infection. Photo: Maresa Sheehan.

### Urinary/Reproductive Tract Schmallenberg virus

An aborted bovine foetus of approximately seven months gestation was presented for post-mortem examination to Kilkenny RVL. There was marked hydranencephaly with doming of the skull. No other gross abnormalities were noted. A positive PCR result for Schmallenberg virus (SBV) was detected. This virus is a member of the Bunyaviridae family and first detected in Europe in 2011. Transmission occurs via midges. Infection of non-pregnant ruminants typically results in mild clinical signs which can include fever, reduced milk production, reduced fertility, and diarrhoea. Infection of pregnant ruminants may result in foetal infection, and the outcome of infection depends on gestational age. Congenital defects in affected foetuses include arthrogryposis, torticollis, scoliosis, and other skeletal malformations. Central nervous system (CNS) malformations include porencephaly, hydranencephaly, cerebellar dysplasia and dysplasia of the brainstem and spinal cord. Foetuses surviving may be weak, may have neurological signs or may appear normal at birth.



**Figure 7:** Hydranencephaly in a case of abortion due to Schmallenberg virus. Photo: Lisa Buckley.

### Cardiovascular System

#### Vegetative endocarditis

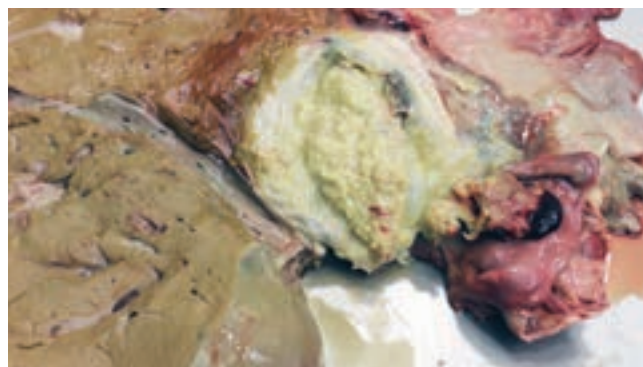
Athlone RVL examined a three-year-old Friesian cow with a history over a 10-day period of inappetence, bradycardia and pale mucous membranes; the animal had been treated by the vet for abomasal ulcers. There was no response to treatment. On post-mortem examination, there was marked subcutaneous brisket oedema and bowel oedema, and marked hydrothorax. There was a large vegetative endocarditis lesion on the tricuspid (right atrioventricular) valve and much milder lesion on the left atrioventricular valve. The liver was enlarged, with rounded edges and a 'nutmeg' pattern on cross section. There was oedema of the abomasal folds and multifocal ulceration resulting in haemorrhage on the abomasal mucosa and chocolate brown, fluid abomasal contents. A conclusion of right-sided vegetative endocarditis leading to congestive heart failure was made. The disease predominantly affects the tricuspid valve in cattle, perhaps due to bacteria arising in the gastrointestinal tract and liver. Common underlying causes include: liver abscesses, traumatic reticulitis, metritis, mastitis, navel abscesses, and 'joint ill'. Anaemia may be present as the red blood cells are damaged as they pass through the lesion.



**Figure 8:** Vegetative endocarditis on the tricuspid valve. Photo: Denise Murphy.

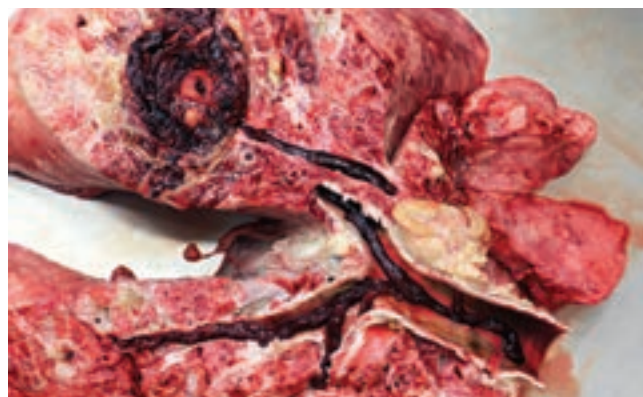
#### Caudal vena cava thrombosis and thromboembolic pulmonary aneurism

Dublin RVL carried out a necropsy on a two-year-old cow that had been noticed with blood discharge from its mouth since the previous day. On gross examination, there was moderate diffuse pallor, moderate blood staining of the nostrils and mouth, and large fresh blood clots in the oral cavity, oesophagus, and forestomachs. A single, large, poorly-delimited abscess (6x4x5 cm) was present in the liver, surrounding and involving the caudal vena cava and forming a large stratified friable thrombus. A large, arborised, non-fragmented fresh blood clot was present within the tracheal and the bronchial tree. The lungs were bilaterally diffusely expanded, soft and pale with disseminated blood aspiration. In the left caudal lobe, a well-delimited aneurysm (5x5x5 cm) of a pulmonary arterial vessel was present surrounded by moderate fibrosis, filled with a blood clot and necrotic debris, that had eroded and was communicating with a medium-size bronchus and then with the large branch-like blood clot seen in the main airways. On cross section, there were also multifocal, well-capsulated purulent foci (0.5-1.5cm).



**Figure 9:** A hepatic abscess involving the caudal vena cava. Photo: Sebastian Alessandro Mignacca.

The animal had a caudal vena cava thrombosis (CVCT), embolic pneumonia, and rupture of a pulmonary blood vessel which led to a consequent intrabronchial haemorrhage, haemoptysis, epistaxis, and animal death. Caudal vena cava thrombosis could be directly related to a subacute ruminal acidosis, which causes bacterial ingress through the ruminal mucosa, hepatic abscessation, and secondary metastatic embolic pneumonia.



**Figure 10:** Pulmonary aneurysm and a branchlike blood clot in the airways. Photo: Sebastian Alessandro Mignacca.

**Nervous System**

**Meningitis**

A one-year-old bullock was presented to Kilkenny RVL with a history of sudden death. On post-mortem examination, there was increased opacity and thickening of the meninges covering the mid and hind brain. A swab, taken from the area for culture, yielded no significant growth. On histopathology, there was a severe diffuse suppurative meningitis with suspected multifocal vasculitis. Key differentials for the changes seen were *Listeria* sp. or *H. somni* infection. Bacteraemia that leads to CNS vascular damage is a mode of entry for *H. somni*, while axonal transport through nerves allows *Listeria* sp. to penetrate the CNS.



**Figure 11:** Fibrinous meningitis causing opacity and thickening of the meninges. Photo: Lisa Buckley.

Athlone RVL examined a yearling with a history of very acute onset of disease; it had been treated for pneumonia with no response and died. Upon necropsy, there was diffuse, mild, pulmonary congestion and froth in the trachea. There was mild splenic enlargement and there were small black tracts at the thin end of the liver that were suggestive of parasitism. The brain did not fluoresce under ultraviolet light. Renal cortex lead concentrations were normal. *Clostridium perfringens* toxin results were negative. Histopathology of the brain showed a diffuse, fibrinosuppurative meningitis. In the liver sections, there was periportal fibrosis and biliary proliferation, with multifocal areas of hepatocyte degeneration, haemorrhage and haemosiderin-laden macrophages consistent with liver fluke pathology. PCR for *H. somni* was inconclusive. A conclusion of bacterial meningitis was made.

A ten-month-old weanling with a history of nervous signs was submitted to Sligo RVL. On post-mortem examination, there was severe proliferative abomasitis and thickened small intestinal mucosa. The liver was enlarged and friable and the intestinal contents were fluid. On histopathology, there was severe acute fibrinosuppurative meningitis. A pathogen was not detected. The cause of death in this yearling was meningitis. Histopathology indicates a bacterial agent is likely and the intestinal pathology indicates a previous parasitic gastroenteritis that may have debilitated the animal and predisposed it to the nervous disease.

**Musculoskeletal**

**Traumatic haemorrhage**

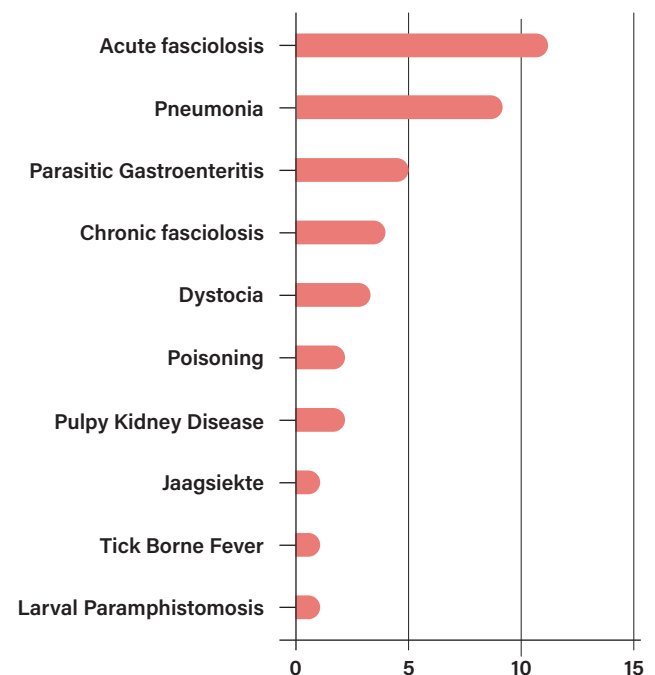
Athlone examined a pregnant heifer that had been found recumbent on the slats the previous evening, with a slight shiver. The herd owner tried to rouse the heifer but, as he did, the heifer collapsed and died. The carcass preservation and body condition were good. The carcass was pale, as were the mucous membranes, liver, lung and kidneys. There was marked subcutaneous oedema and haemorrhage over the medial aspect of the right thigh, and severe, extensive haemorrhage and a large haematoma in the muscles above and below the stifle joint. The joints and bones of the right hindlimb were unaffected. It was concluded that the heifer most likely slipped on the slats causing rupture of blood vessels and major haemorrhage into the soft tissues of the right hindlimb resulting in death from haemorrhagic shock.



**Figure 12:** Haemorrhage in the skeletal muscles of the hind leg. Photo: Denise Murphy.

**Sheep**

Acute fasciolosis and pneumonia were the most common diagnoses at necropsy in sheep in the RVLs during December 2023.



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

## Gastrointestinal Tract



**Figure 13:** Abscessation and necrosis in the oropharyngeal area. Photo: Aideen Kennedy.

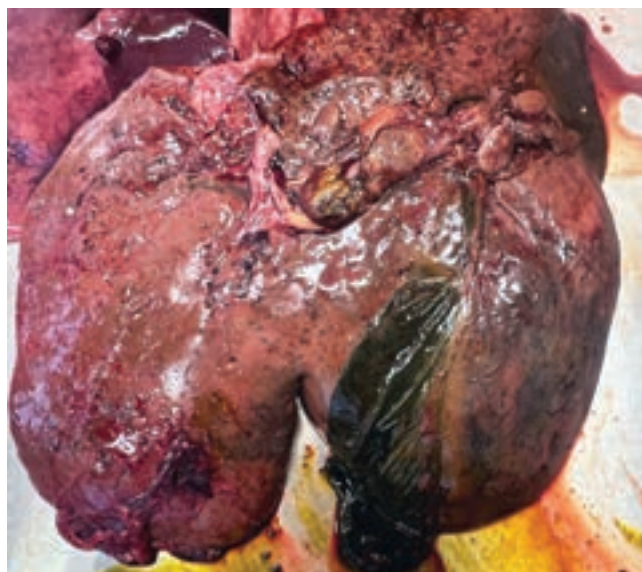
### Traumatic pharyngitis (dosing gun injury)

A six-month-old lamb was submitted to Kilkenny RVL with a history of respiratory signs. There had been five deaths in the flock. On necropsy, there was a large area of abscessation and necrosis in the oropharyngeal area adjacent to the oesophagus. The lungs were congested and oedematous, and there was fibrin on the pleurae. The lesions were suggestive of trauma due to a dosing gun injury and a review of technique and examination of the gun for sharp edges advised. The pneumonia was likely secondary to the injury.



**Figure 14:** Cervical abscess associated with a case of traumatic pharyngitis. Photo: Alan Johnson.

A five-year-old pedigree Zwartbles ewe was presented to Limerick RVL with a history of holding her tail out unusually for a few days. This progressed to losing balance on the front limbs. The ewe had stopped eating. She was treated with antibiotics but weakened and died. It was the second death of a ewe in a flock of 300. On necropsy, there was a large retropharyngeal abscess with localised cellulitis and extension to the cervical spinal canal. The abscess was most likely a sequel to a dosing gun injury. The lesion is likely to have extended into the spinal canal and resulted in the nervous signs seen. Culture yielded a mixed bacterial growth.



**Figure 15:** Friable liver with haemorrhagic tracts in a ewe with chronic-active fasciolosis. Photo: Shane McGettrick.

### Fasciolosis

A three-year-old ewe with a history of apparent blindness, pyrexia, and sudden death was examined by Sligo RVL. Post-mortem examination revealed severe jaundice. There was abdominal haemorrhage. The liver was friable with myriad haemorrhagic tracts and adult fluke present in the gall bladder. The cause of death in this animal was hepatic failure and haemorrhage as a sequel to a very severe fluke burden.



**Figure 16:** Abdominal haemorrhage in a ewe with chronic-active fasciolosis. Photo: Shane McGettrick.

## Respiratory Tract

### Systemic *Bibersteinia trehalosi* infection

A nine-month-old lamb was found with froth at its nose before it died, and was submitted to Kilkenny RVL. There had been two other cases in the flock. On necropsy, there was marked oesophagitis with focal ulceration; some ulcers were covered in an exudate. The lungs were very congested and oedematous. The intestinal contents were liquid. *Bibersteinia trehalosi* was cultured from multiple organs indicating a bacteraemia/septicaemia. There was a strongyle faecal egg count of 5,000 eggs per gram. *B. trehalosi* can be associated with ulcerative lesions covered by yellow plaques of fibrin and necrotic debris. Systemic *B. trehalosi* infections typically affect six- to nine-month-old lambs with outbreaks

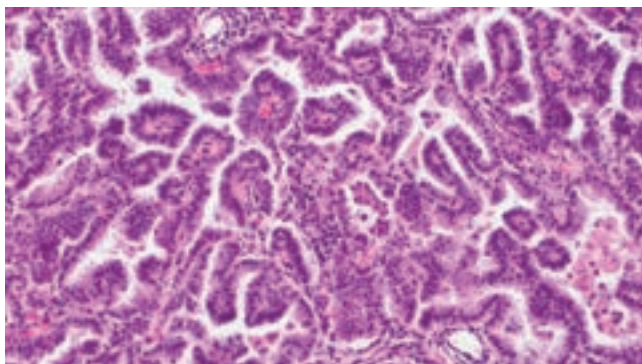
usually occurring between October and December although infections can also be seen in adult animals. Control is best achieved by vaccination; however, parasitic gastroenteritis and stress can cause animals to become susceptible despite appropriate vaccination.



**Figure 17:** Oesophagitis due to systemic infection with *Bibersteinia trehalosi*. Photo: Aideen Kennedy.

### Ovine Pulmonary Adenocarcinoma

A ewe was submitted to Kilkenny RVL with a history of sudden death. Lesions of acute pasteurellosis and ovine pulmonary adenocarcinoma (OPA) or 'jaagsiekte' were seen in the lungs of this animal. A secondary disease process, in addition to OPA, is a common finding in affected sheep. A review of the control of OPA is recommended in this flock. As there is no cure for this disease, a policy of targeted culling should be considered.



**Figure 18:** Ovine pulmonary adenocarcinoma (OPA) or 'jaagsiekte' in a ewe. Photo: Maresa Sheehan.

### Urinary/Reproductive Tract

#### Nephritis

Sligo RVL received the carcass of a ten-month-old lamb which had been found dead after frothing from the mouth. On post-mortem examination, there was extensive haemorrhage along the penile shaft with a small concretion (urolith) present at tip of urethral process. An extensive blood clot was obstructing the urethra throughout the penis. There was severe cystitis. There were focally extensive haemorrhages present on both kidneys. Rumen contents were soft and mushy, and the ruminal pH was 5.5. Histopathology of the bladder revealed multifocal, acute, severe necrotising cystitis with large areas of submucosal haemorrhage and loss of epithelium. The penis presented

with extensive myositis and perivasculitis. There was also diffuse, severe, acute, suppurative nephritis with numerous bacterial colonies present. The liver presented with diffuse, chronic, severe, fibrosing hepatitis with biliary hyperplasia and periportal fibrosis. Globular leucocytes and haemosiderophages were present. There were areas of haemorrhage; there were also areas of necrosis, suggestive of concurrent septicaemia. *H. somni* was cultured from the bladder and kidneys. The cause of death in this animal was bacterial cystitis and nephritis likely predisposed by urolithiasis. The ruminal pH is suggestive of ante-mortem ruminal acidosis. There was also severe, concurrent parasitic gastro-enteritis with histologic evidence of fasciolosis.

### Nervous System

#### Trauma

Sligo RVL examined the carcass of a one-year-old ram that had been found dead in a sitting position, where no signs of illness had been noted previously. On post-mortem examination, there was multifocal abscessation in the lung with 10 per cent consolidation. There was meningeal haemorrhage with large sub-arachnoid haemorrhage. The cause of death in this ram was blunt cranial trauma. Injuries such as this are associated with fighting, especially around the breeding season. There was a severe chronic pneumonia that may have weakened the animal.



**Figure 19:** Extensive meningeal haemorrhage in a case of blunt cranial trauma in a ram. Photo: Shane McGettrick.

### Miscellaneous

Wool samples from pruritic housed sheep were submitted to Limerick for examination. Numerous biting lice, identified as *Damalinia ovis*, were seen in the samples.



**Figure 20:** Biting louse identified as *Damalinia ovis*. Photo: Sarah Costello.

## Pigs

### *Streptococcus suis* meningitis and arthritis

Three piglets were euthanised and submitted to Dublin RVL in order to investigate joint problems within the group. Two of the three had multiple joints containing excess opaque yellow fluid and a small amount of fibrin in joint space and periarticular areas. Two of the three presented with fibrin strands diffusely spread within the abdominal cavity and diffuse congestion of the meninges. *Streptococcus suis* was cultured from the brain of one animal and from multiple joints of another. Histopathological examination of the three brains disclosed fibrinosuppurative meningitis consistent with *S. suis*. The isolate was sent to an external private laboratory for serotyping, and the result was *Streptococcus suis* serotype 1 or 14. *S. suis* is a bacterium living in the tonsils of most pigs and capable of causing disease in the brain (meningitis) and other organs (septicaemia). While *S. suis* is most often associated with meningitis, other manifestations caused by it include polyserositis, arthritis, valvular endocarditis, myocarditis, pericarditis, and abortion. It is also considered as a secondary agent of pneumonia. There are several types of *S. suis*, and they may slightly vary depending on location. Serotyping should be done on isolated colonies to establish the importance of a specific serotype in a herd.



**Figure 21:** Fibrinopurulent arthritis caused by infection with *Streptococcus suis*. Photo: Sara Salgado.

*S. suis* is a zoonosis, capable of causing septicaemia, meningitis, and septic shock. Meat industry workers are at greatest risk but farmers, veterinarians, food preparers and anyone else who handles uncooked pork or is in contact with live pigs, and especially sick pigs, may also be exposed. Butchers and others become infected through cuts and abrasions while handling and cutting pig carcasses.



Tullow, Co Carlow

**LICENSED WHOLESALERS OF VETERINARY MEDICINES**

Partnership Programme Presents



**\*TRICHOBEN (Ringworm) Lyophilisate and solvent for preparation of injection suspension for cattle. Withdrawal period - Meat -14 days**



**BLOATENZ (BLOAT)**

Helps maintain normal gut function in cattle grazing lush pasture or clover pasture. For the treatment of Bloat, a digestive disorder of ruminant animals and occurs when trapped fermentation gas causes distention of the rumen and reticulum. Bloatenz is a unique product, is the only product of its kind on the market available from Animal Health Distributors in 5 LTR and 25LTR drums.



For both the prevention and treatment of bovine trichophytosis. 5 x (10ml - 5 Dose) and 40ml/20 Dose.

\*These were imported under Special Licence issued by the Department of Agriculture, Food and the Marine.

For further details contact: Tony Fleming: [tfleming@cahg.ie](mailto:tfleming@cahg.ie) Call: 087 230 2034  
or: Breda Meehan: [bmeehan@cahg.ie](mailto:bmeehan@cahg.ie) Call: 087 687 5025 or: Steve Martin Call: 086 770 3502