Regional Veterinary Laboratories Report

January 2022

Regional Veterinary Laboratories (RVLs) carried out necropsy examinations on 368 carcases and 422 foetuses during January 2022. Additionally, 1,821 diagnostic samples were tested to assist private veterinary practitioners with the diagnosis and control of disease in food producing animals. This report describes a selection of cases investigated by the Department of Agriculture, Food and the Marine's (DAFM) veterinary laboratories in January 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 from necropsy in cattle in the RVLs during January 2022.

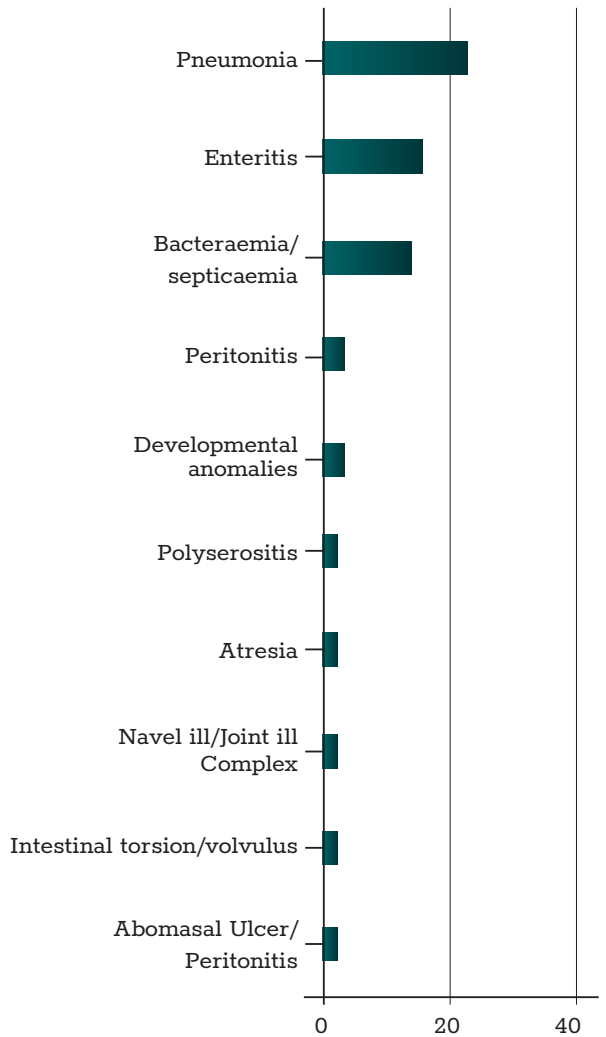

Table 1: The most common diagnoses in cattle submitted for necropsy in January 2022.

GASTROINTESTINAL TRACT

Enteritis

A nine-month-old weanling heifer was submitted to Sligo RVL with a very severe, watery, bloody diarrhoea. Clinical signs were present for two days before death and treatment attempts were unsuccessful. At necropsy, the distal small intestine and proximal large intestine were thickened and there was a haemorrhagic mucosa. Histopathology revealed severe lymphocytic and necrotising enteritis with multifocal haemorrhages throughout the lamina propria. Intranuclear basophilic amorphous and glassy inclusion bodies typical of adenovirus were present in endothelial cells. Multifocally some protozoal life stages were observed in crypt epithelium. Death was due to multifactorial infectious enteritis. The presence of adenovirus was considered significant in this case due to the number of inclusion bodies observed. It is likely that there was also a coccidial burden. Adenovirus is an occasional finding in enteritis in cattle.

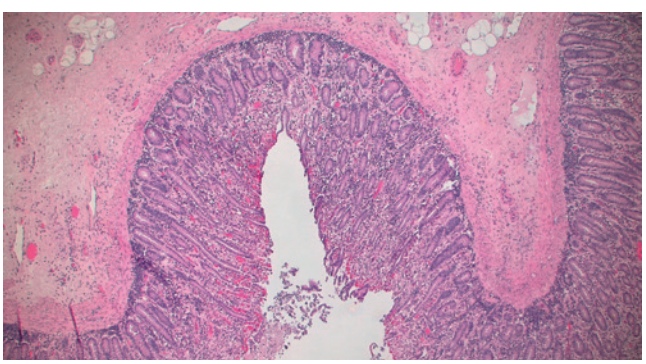

Figure 1: Large intestine with multifocal haemorrhage. Photo: Shane McGettrick.

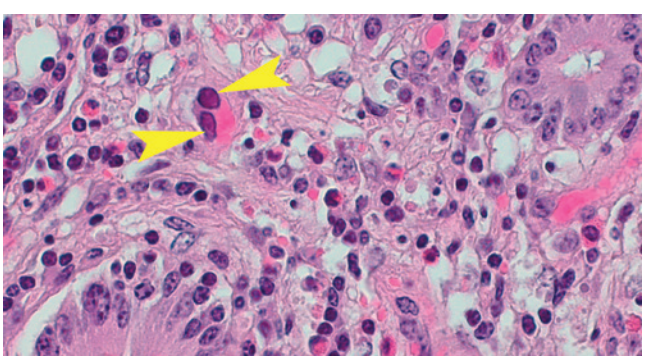

Figure 2: Multiple intranuclear inclusion bodies (arrow heads) in capillary endothelium in intestinal lamina propria of weanling with severe enteritis. Photo: Shane McGettrick.

Traumatic reticular haemorrhage

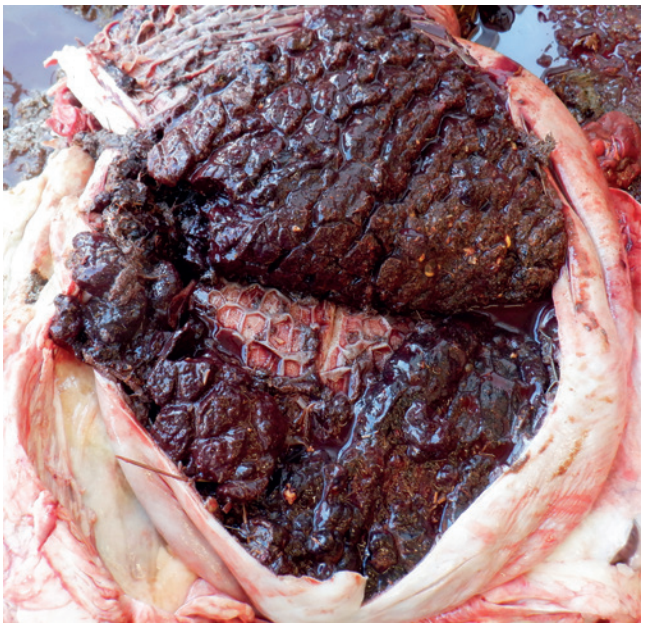

Figure 3: Large blood clots in the reticulum associated with "hardware disease". Photo: Maresa Sheehan.

A cow was submitted to Kilkenny RVL with a history of sudden death. There were multiple large blood clots in the forestomachs and bloody material in the abomasum and proximal small intestines. There was an approximately 7.5cm wire penetrating the wall of the reticulum and there was an associated suspected phlebitis. There was a mild metritis in the involuting uterus. One quarter of the udder appeared non-lactating. There was free fluid in the pericardium. A diagnosis of haemorrhage associated with the presence of a wire and associated phlebitis. It was advised that the farmer carefully examined the feed and feed area for evidence of hardware.

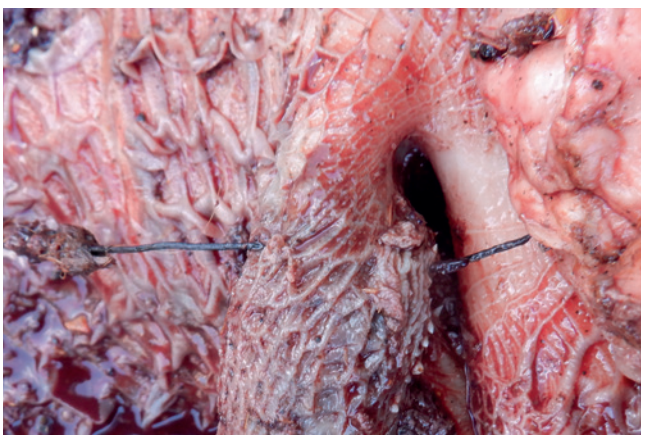

Figure 4: A metal wire found in the reticulum. Photo: Maresa Sheehan.

Perforated abomasal ulcer

Athlone RVL examined a two-year-old bullock with a history of sudden death, no prior sickness. There was a diffuse bread-and-butter peritonitis with fibrinous adhesions between the forestomachs and the omentum and there was ingesta free in the abdominal cavity. There was severe multifocal abomasal ulceration and one of the ulcers had perforated through to the serosa with leakage of ingesta. A conclusion of peritonitis secondary to a perforated abomasal ulcer was made. The causes of abomasal ulceration in adult cattle are not well understood. Many causes have been suggested. Although abomasal ulcers can occur any time during lactation, they are common in high-producing, mature dairy cows within the first six weeks after parturition. One cause may be a prolonged inappetence, which results in sustained periods of low abomasal ph. Diets high in starch have also been identified as a risk factor. Abomasal ulcers may also arise in association with lymphosarcoma, abomasal disorders (displacement or volvulus) and some viral diseases, e.g., BVD. The role of stress (e.g., transport, new groups, dietary changes) in the pathogenesis is not completely understood and seems to vary substantially between animals; however, it is likely that stress is a major contributing factor.

RESPIRATORY TRACT

Pneumonia

Sligo RVL examined two five-month-old calves which had been found dead in the field. On post-mortem examination, there was a severe, diffuse, haemorrhagic tracheitis. The lung presented with cranioventral consolidation affecting approximately 40 per cent and 50 per cent of lung parenchyma respectively, as well as interlobular emphysema. Bovine respiratory syncytial virus (BRSV) was detected by polymerase chain reaction (PCR) and a diagnosis of acute viral pneumonia was made. However, gross post-mortem findings were highly indicative of bovine herpesvirus one (BHV-1) involvement, the causative agent of infectious bovine rhinotracheitis (IBR). IBR is frequently involved in multifactorial respiratory disease in cattle. Close monitoring of cohort animals as well as a review of vaccination programmes were recommended.

Athlone RVL examined a five-week-old calf with a history of sickness and pining over the course of 10 days. It had been treated by the veterinary surgeon but showed no response and had died. There was consolidation of the right cranial lung lobe with multifocal small pale areas of necrosis and abscessation visible on cross section. There was bilateral periarticular oedema of the stifle joints and fibrin and excessive joint fluid in the right hock joint. *Mycoplasma bovis* was detected in the joints and lungs by PCR. BHV1 (IBR) and *Pasteurella multocida* were also detected in the lungs. Histopathology of lungs showed multifocal areas of caseous necrosis throughout the lung sections typical of *Mycoplasma bovis* infection.

A ten-month-old weanling with pneumonia-like symptoms and bloat, unresponsive to treatment was submitted to Sligo RVL. Necropsy revealed multifocal haemorrhages on lungs and pleura. There were also multifocal fibrous pleural adhesions throughout the thoracic cavity. *Mycoplasma bovis* as well as *P. multocida* were detected by PCR. Gross findings suggest a chronic pneumonia in this animal. The detection of *Mycoplasma bovis* and *P. multocida* were considered significant.

Pericarditis, pleuritis, pneumonia

An eleven-month-old weanling died suddenly with no signs observed and was submitted to Kilkenny RVL. On necropsy, there was a fibrinous pericarditis, pleuritis and pneumonia. Approximately 70 per cent of lung tissue was consolidated and there was marked distension of the interlobular septae with fibrin and oedema. *Mannheimia haemolytica* and *P. multocida* were both cultured from the lung. PCR positive results were also obtained for both agents. A review of control of respiratory disease was recommended.

Figure 5: Fibrinous pleuritis and pneumonia. Photo: Aideen Kennedy.

Athlone RVL examined a ten-week-old calf with a history of sudden onset recumbency followed by death within 24 hours. There had been two other losses in the herd. On gross post-mortem examination, there was mild dehydration. There was a severe, diffuse, fibrinous pericarditis and pleuritis. There was moderate cranioventral congestion and consolidation of approximately 20-30 per cent of lung parenchyma. There was a moderate, diffuse peritonitis which was more severe in the cranial peritoneal cavity. *M. haemolytica* was isolated from lung tissue. On PCR examination, *M. haemolytica* and *P. multocida* were detected. On histopathological examination, there was a severe, diffuse, acute, suppurative bronchopneumonia with diffuse oedema and congestion, and streaming 'oat cells', a severe, diffuse, fibrinosuppurative pleuritis, a marked, multifocal, fibrinosuppurative pericarditis, and a moderate, diffuse, fibrinosuppurative peritonitis. A diagnosis of pericarditis, pleuritis, peritonitis and bronchopneumonia caused by *M. haemolytica* was made.

Figure 6: Fibrinous pleuritis. Photo: Sarah Delaney.

CARDIOVASCULAR SYSTEM

Deformities

Sligo RVL diagnosed a ventricular septal defect and an atrial septal defect in two submitted calves, aged less than one day and two weeks respectively. Both animals were perceived as normal before a sudden death. Both belong to the most common cardiovascular anomalies observed in bovines. However, the aetiology differs a little between them. The atrial septal defect can develop either by incomplete or absent closure of the foramen ovale, a foetal interatrial shunt, or as a true developmental septal defect. The ventricular septal occurs in cases of failure of the development of the interventricular septum, leading then to shunting between the ventricles.

MUSCULOSKELETAL

Clostridial myositis

A ten-month-old weanling with a history of sudden death was submitted to Sligo RVL. On post-mortem examination, there was locally extensive gangrenous and emphysematous myositis and *Clostridium chauvoei* was detected in the lesions by Fluorescent Antibody Technique (FAT) A diagnosis of clostridial myositis or 'Blackleg' was made. This case highlights that while clostridial myositis might be perceived as less common during housing season, it still occasionally occurs.

MISCELLANEOUS

Omphalophlebitis

Athlone RVL examined a two-day-old calf with a history of an uneventful birth and colostrum feeding, which was found recumbent after 24 hours, was tube fed and responded but became recumbent again and died. The navel was enlarged with haemorrhage and infection extending caudally along umbilical vessels to the urinary bladder, and there was a diffuse, mild, fibrinous peritonitis with fibrin on the surface of the liver and spleen. There was also a fibrinous pericarditis and pleurisy. There were milk clots in a distended rumen and abomasum and the small and large intestinal contents were loose and bright mustard in colour. The zinc sulphate turbidity test (ZST) returned a result of 12 units, indicating suboptimal colostral immunity. *Escherichia coli* was isolated from several tissues. A conclusion of peritonitis and pericarditis secondary to navel infection and hypogammaglobulinaemia was made.

Sligo RVL examined a few cases with a diagnosis of omphalophlebitis and sequelae.

In one case, a six-week-old calf with a history of navel ill which had been treated successfully, then developed respiratory and colic signs and died subsequently. The carcase was pale and there was a fibrous peritonitis. There was a perforated abomasal ulcer and large bloods clots were present in the abdomen. The urachus was purulent and distended. The most likely cause of death in this calf was abomasal ulceration perforation and haemorrhage. There was concurrent pneumonia and a longstanding navel infection. Abomasal ulceration is associated with stress, likely caused by recent pneumonia and navel infection.

Another case concerned an 11-day-old calf which was

one of twins that stopped sucking and presented with a slightly raised temperature. On post-mortem examination, there was fibrous peritonitis associated with a fulminant omphalophlebitis. *Trueperella pyogenes* was detected in the lesion in this case.

Septicaemia

A two-week-old calf was submitted to Sligo RVL with a history of respiratory signs without improvement despite treatment. On necropsy, severe dehydration was present. There was diffuse fibrinous pericarditis and polyarthritis. *E. coli* was cultured from the lesions. *E coli* septicaemia is the most likely cause of the observed lesions in this case.

SHEEP

Intestinal torsion and pneumonia were the most common diagnoses from necropsy in sheep in the RVLs during January 2022.

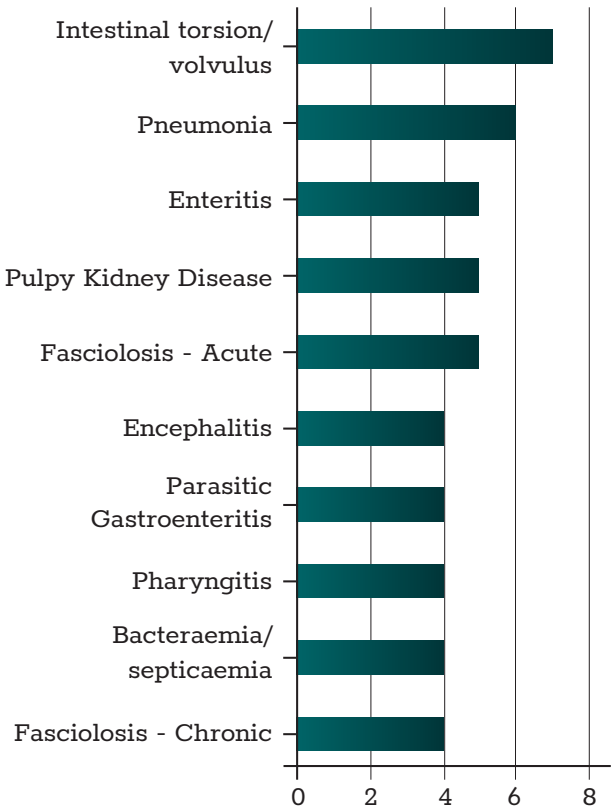

Table 2: The most common diagnoses in sheep submitted for necropsy in January 2022.

GASTROINTESTINAL TRACT

Mesenteric volvolus

A three-year-old ewe was submitted for PM examination to Limerick RVL with a history of sudden death at grass. 'Bloody guts' were found at necropsy; the small intestine was a deep purple colour and there appeared to be a volvulus or torsion of the mesenteric root. A sample of intestinal content was negative for *Clostridium perfringens* and its toxins upon enzyme linked immunosorbent assay (ELISA) testing. A diagnosis of mesenteric root torsion was made.

Clostridial enterotoxaemia

A three-week-old single lamb was submitted to Limerick RVL. On external examination, there was blood around the rectum which had been scavenged and had extended into the abdominal cavity. There was bloody fluid in the abdominal cavity. The intestines contained loose green contents. ELISA testing of the intestinal contents detected epsilon toxin (ETX) of *C. perfringens*. This toxin is produced by *C. perfringens* type B and D strains and causes enterotoxaemia or pulpy kidney disease, a highly lethal disease of lambs. A review of vaccination protocols was indicated, with use of a multivalent clostridial vaccine recommended.

Fasciolosis

Sligo RVL diagnosed fasciolosis in several ewes and an eight-month-old lamb. Pathology processes observed were all very similar. In one case of a five-year-old Texel ewe, the animal had been observed "failing" for some weeks and finally showed anorexia before death. The carcase was pale and there was pleural oedema, ascites and serous fat atrophy. The liver surface was irregular and rough and there were large numbers of adult fluke present in bile ducts and the gall bladder.

RESPIRATORY TRACT

Diaphragmatic rupture/laryngeal chondritis

Athlone RVL examined a two-year-old Texel ewe with a history of pyrexia, high respiratory rate, and nasal discharge for approximately one week. There had been no response to treatment. On gross post-mortem examination, there was a focal diaphragmatic hernia approximately 9-10cm in diameter with a smooth, rounded, thickened rim; it appeared chronic in nature. There was herniation of the cranial rumen and loops of intestine into the pleural cavity. There was mild, bilateral laryngeal chondritis which appeared chronic in nature. There was a diffuse nutmeg pattern to the liver. On bacteriology, *Pseudomonas aeruginosa* was isolated from a swab of the laryngeal lesion. A diagnosis of diaphragmatic hernia was made. A syndrome of diaphragmatic rupture secondary to laryngeal chondritis has been described in the Texel and Beltex breeds. This may be attributed to the large intra-thoracic forces in these breeds.

Figure 7: Herniation of abdominal viscera through the diaphragm (left). Photo: Sarah Delaney.

URINARY/REPRODUCTIVE TRACT

Vibriosis

A lamb foetus was submitted to Kilkenny. It was a first abortion in the flock. There were no visible lesions on the placenta, multiple pale necrotic foci were found on the liver. *Campylobacter* sp. was cultured from the foetus and further lab tests showed it to be *Campylobacter fetus* subspecies *fetus*. Campylobacter abortion, or vibriosis, in sheep is caused by *C. fetus fetus* or *Campylobacter jejuni*. Initial source of infection is faeces of domestic livestock, wildlife, including birds. Faecal contamination of water and/or feed troughs poses a risk. Large numbers of organisms are present in the aborted foetus and placenta and these act as a source of infection for susceptible ewes. Abortion usually occurs in the last third of pregnancy. Abortion storms may occur. Control involves strict isolation of infected animals, early diagnosis and disinfection of contaminated areas. Dividing the flock into two or three separate lambing groups may help to limit spread. Campylobacter is zoonotic.

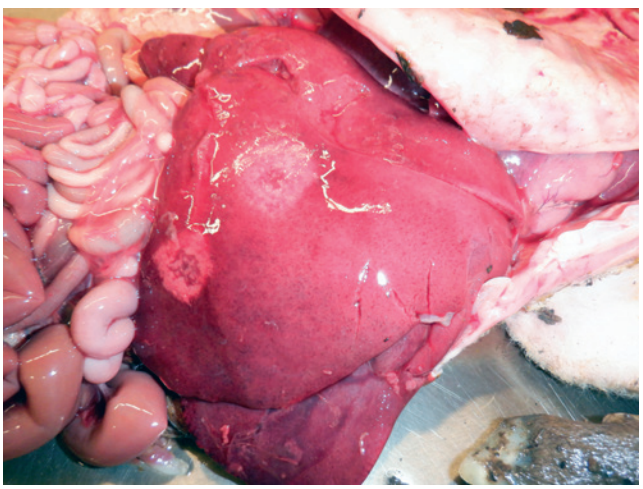

Figure 8: Hepatic lesions in an ovine foetus from which *Campylobacter fetus* subspecies *fetus* was cultured. Photo: Aideen Kennedy.

CARDIOVASCULAR SYSTEM

Hepatic abscessation

Athlone RVL examined a three-day-old lamb with a history of having been sick for two days, it became recumbent quickly, drowsy and weak, was treated by the vet but didn't respond and died. On gross post-mortem examination, there were multifocal abscesses in liver and purulent material in the umbilical vessels from navel to liver. The abdomen was distended due to abomasum distension with milk and the faeces were pasty. A conclusion of liver abscessation secondary to navel infection was reached.

NERVOUS SYSTEM

Pharyngeal abscess/spinal meningitis

A four-day-old lamb from an 85-ewe flock with a history of high mortality in lambs two-to-four days of age was submitted to Limerick RVL. A total of 34 lamb deaths had occurred in a group of 85. Lambs were dosed with oral antibiotics soon after birth; this appears to have stopped new cases of watery mouth. This lamb had a history of stiffness, lameness and weakness and had been euthanised. Necropsy disclosed some bony lesions on the ribs suggesting injury around lambing. There was a large, retropharyngeal abscess extending to the cervical vertebrae, and pulmonary and hepatic congestion. *T. pyogenes* was isolated from the abscess. The abscess may have resulted from dosing injury, possibly when administering the antibiotics. Histopathology showed a focal lesion of suppurative meningitis in the spinal cord section. The findings are suggestive of an injury to the pharynx with development of an abscess which extended to the spine and spinal cord.

MISCELLANEOUS

Bacteraemia/carcinoma

A two-year-old ewe with a history of chronic ill thrift was submitted to Kilkenny RVL. This was the fourth case of ill thrift in the flock that had been unresponsive to dosing treatment. On examination, there was multifocal white lesions and abscesses in the lung. Many of the abscesses contained purulent material. The bronchial lymph nodes were enlarged and contained inspissated puss. The normal shape of the liver was distorted and the mesentery was adherent to it. There were multifocal areas of white/yellow firm lesions throughout the liver. There were multifocal white lesions on both kidneys. *Bibersteinia trehalosi* was cultured from multiple organs indicating a bacteraemia. Histopathology showed a carcinoma in the lung, liver and kidney, the origin of which was likely hepatic. As this was unlikely to be the origin of ill thrift in the flock, submission of further cases was recommended.

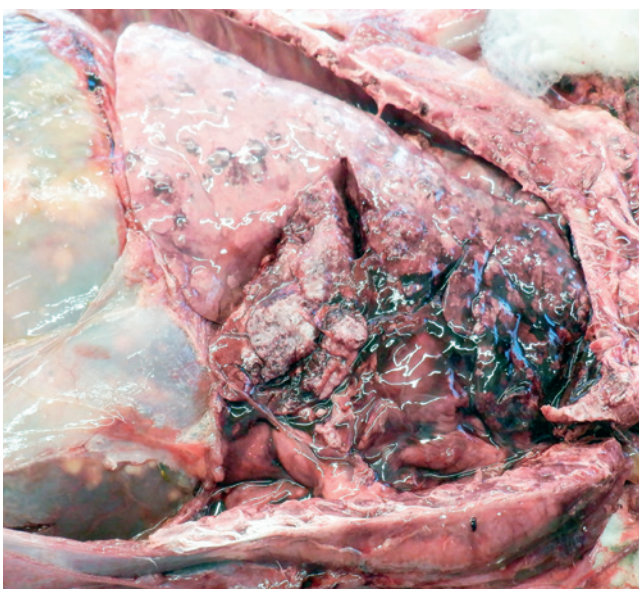

Figure 9: Liver and lung lesions determined to be carcinoma upon histopathology. Photo: Aideen Kennedy.

Abdominal haemorrhage

Athlone RVL examined a four-year-old ewe with a history of sudden death. On gross post-mortem examination, the carcase was diffusely pale, in particular the lungs. There was massive haemorrhage in the abdominal cavity with large blood clots and blood surrounding the organs. The source of

haemorrhage was suspected to be the mesenteric vessels. A diagnosis of abdominal haemorrhage was made, the most likely aetiology being trauma.

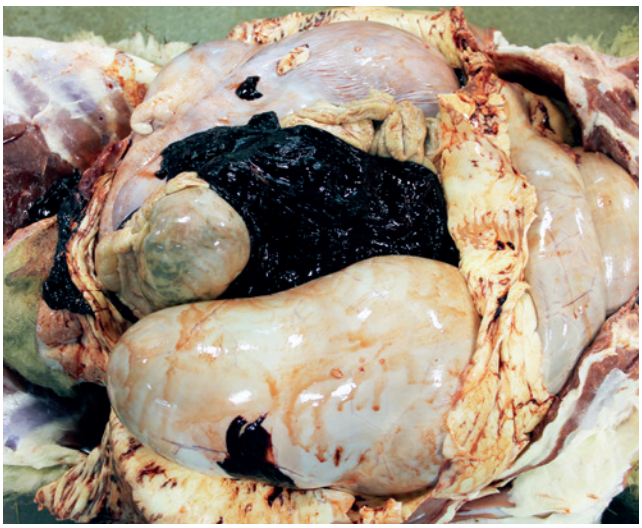

Figure 10: Abdominal haemorrhage in a ewe. Photo: Sarah Delaney.

POULTRY

Parasitism

A nine-month-old rooster was submitted to Limerick RVL for necropsy. The carcase was thin with a poor covering of muscle over the chest wall with subcutaneous oedema; there was a large quantity of straw-coloured fluid in the thorax and abdomen containing fibrin clots. The heart was flaccid and appeared enlarged, the gizzard contained grit and yellow contents, and the intestines contained loose yellow/green contents. Laboratory analysis of intestinal contents detected 4,700 ascarid eggs per gram (EPG) and a heavy burden of coccidial oocysts. Signs of coccidiosis range from decreased growth rate to a high percentage of visibly sick birds, severe diarrhoea, and high mortality. Both clinically infected and recovered birds shed oocysts in their droppings, which contaminate feed, dust, water, litter, and soil. A complete review of parasite control and husbandry was advised. Ascarid egg counts greater than 1,000 EPG are considered significant. Diarrhoea is not typically observed in animals infested with adult ascarids, but can be observed, especially when there is co-infection with one or more other pathogens.