Northern Ireland Disease Surveillance Report, January to March 2024

- *Mycobacterium bovis* infection in cattle
- Jejunal haemorrhagic syndrome in cattle
- Unseasonal Babesiosis in cattle
- Parasitism and ovine white liver disease in sheep
- Plant poisoning in sheep
- Jaagsiekte with extension to local lymph nodes in sheep
- Red mite in poultry

These are some of the matters discussed in the Northern Ireland animal disease surveillance quarterly report for January to March 2024

CATTLE:

Respiratory diseases

Mycobacterium bovis infection in cows

Three Jersey cows in poor condition were submitted for post mortem examination. Two of the cows died after a brief period of illness whereas the third cow was found dead. Pneumonic lesions were present in two of the cows marked by multifocal and extensive lesions of caseous necrosis with mineralization. There was swelling of bronchial and mediastinal lymph nodes with caseous necrosis. Lesions typical of tuberculosis were present histologically and intra-lesional acid fast bacilli were detected. *Mycobacterium bovis* was cultured from lung and lymph node of these two cows. Post mortem autolysis was well advanced in the remaining cow. Gross and microscopic lesions were suggestive of necrotising bronchopneumonia of the type typically caused by gram negative bacteria such as *Mannheimia haemolytica* or *Histophilus somni* for example. The cattle came from a herd which was not under TB herd restrictions. The local district veterinary office and practice were promptly notified.

A three- day- old calf was submitted for post mortem examination. Pneumonia was evident, and histopathology revealed a viral interstitial pneumonia with numerous viral syncytia cells evident in the bronchiolar and alveolar epithelium. Bovine respiratory syncytial virus (bRSV) nucleic acid was detected in the lung using RT-PCR. The zinc sulphate tubidity test was zero, highlighting the importance of good colostrum management to prevent respiratory disease from birth.

Pulmonary embolism associated with hepatic abscessation

An adult lactating dairy cow in good body condition was found to have a large abscess in the liver. Multiple pulmonary emboli were detected histologically, comprising debris and inflammatory cells consistent with an embolic shower.

Alimentary diseases

Mesenteric torsion

Digestive upset, gaseous distension and mesenteric torsion were diagnosed on post mortem examination of a six-week-old calf. The rumen was full of a mixture of forage and grain with an acidic smell (pH 5.06) and there was gaseous distension of the small and large intestine with torsion around the root of the mesentery. On coprological examination there was a moderate number of cryptosporidial oocysts. It was concluded that hyper- motility due to digestive upset, gaseous distension and cryptosporidial infection contributed to the torsion.

In a similar case in a four-week-old calf, there was torsion of the gastrointestinal tract including forestomachs and small intestine, with the abomasum located in the caudal aspect of the abdomen. The abomasum was distended and there was emphysema and ecchymosis of the mucosa. Low ruminal pH of 4.7 was measured. Tetrads of *Sarcina ventriculi* in close association with the abomasal mucosa were detected on histology. Rotavirus and coronavirus infections were also identified in this calf.

Peritonitis

A one- year- old bullock was submitted with a history of ruminal stasis, diarrhoea, and death. There was severe peritonitis with intestinal contents adhered to the abdominal serosa. Careful dissection identified a focus of peritonitis which surrounded transection of three associated areas of jejunum

(FIGURE 1). No significant findings were identified by parasitology or bacteriology. A large number of eosinophils were identified in the mucosa of the small intestine on histology. The presence of eosinophils is usually associated with parasites hence this animal may have been treated when it first became unwell. The parasites or diet could have caused altered intestinal motility leading to a torsion or intussusception and necrosis, which were seen as transections at necropsy.

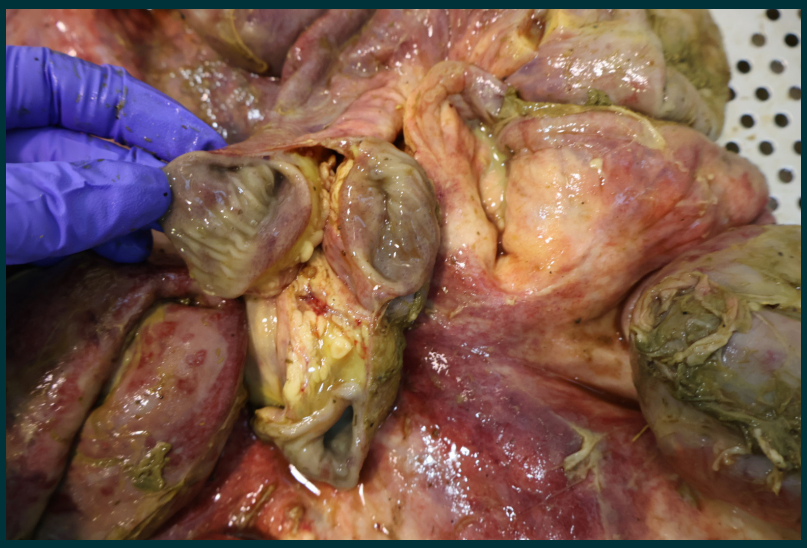

FIGURE 1: Peritonitis associated with jejunal transection

Abomasitis in young calves

Abomasal ulceration with perforation and peritonitis with bowel loop adhesion was diagnosed in a two-week-old milk fed calf. Usually these cases result from ruminal drinking causing acid overspill into the abomasum, with chemical damage to the mucosa and consequent ulceration. Another similar case in a separate herd involved colonisation of the damaged abomasal mucosa by *Sarcina ventriculi* with resulting emphysematous abomasitis.

Jejunal haemorrhagic syndrome

A lactating dairy cow died suddenly one month into lactation. At post mortem examination there was a devitalized portion of the jejunum with frank haemorrhage into the lumen resulting in obstruction of the bowel by clotted blood. This case was diagnosed as Jejunal Haemorrhage Syndrome (JHS) also called Haemorrhagic Bowel Syndrome (HBS). This is a sporadic and fatal disease of predominantly lactating dairy cattle, characterized by segmental hemorrhage and luminal clot formation in the small intestine. Some authors have associated *Clostridium perfringens*, *Aspergillus fumigatus* and nutritional factors with HBS but the precise aetiology is unknown.

Salmonella Dublin infection

A three-week-old calf was euthanased on farm and submitted for post mortem examination. The calf was one of three calves which had presented similarly with ataxia, progressing to paresis of front and hind limbs. Intestinal contents were very fluid, consistent with enteritis. *S.* Dublin was cultured from the intestine, and coronavirus and rotavirus were detected. There was milky fluid in the rumen (ruminal feeder). *Candida* sp. was cultured from the rumen (ruminal candidiasis). There was thick fibrino-purulent material in a shoulder and carpal joint. There was osteomyelitis of the seventh cervical vertebra with necrotic material impinging on the spinal cord. *S.* Dublin was isolated from a swab of this lesion (FIGURE 2).

FIGURE 2: Osteomyelitis of the seventh cervical vertebra associated with *Salmonella* Dublin infection in a calf

Reproductive and mammary diseases

Abortion

Iodine deficiency

Stillbirth associated with iodine deficiency was diagnosed in a full-term – stillborn calf. At necropsy the thyroid was enlarged and histologically there was uneven fill of follicles with many empty of colloid and collapsed, and there was hyperplasia of the follicular epithelium.

Mammary disease

Death due to haemorrhage was diagnosed in an adult dairy cow. At necropsy there was massive haemorrhage extending from the left fore quarter and dissecting through the flank muscle and fascial planes to the left lumbar fossa, associated with an aneurysm in the left mammary artery.

Congenital cardiovascular defects

Necropsy of a four-week-old calf identified a globular shaped heart with distension of the left atrium and ventricle. On transection a 10 cm deficit in the ventricular septal wall was identified and there was a 1.5 cm deficit in the atrial septal wall due to patent foramen ovale (FIGURE 3). The lungs, especially the right side, were overinflated, and blood- filled on incision. There was a small area of cranio-ventral consolidation. The liver had a 'nutmeg' appearance due to centri-lobular congestion and there was an excess of straw -coloured abdominal free fluid. Histology confirmed congestive heart failure with classic signs in liver and lung, with the lungs exhibiting secondary bronchopneumonia.

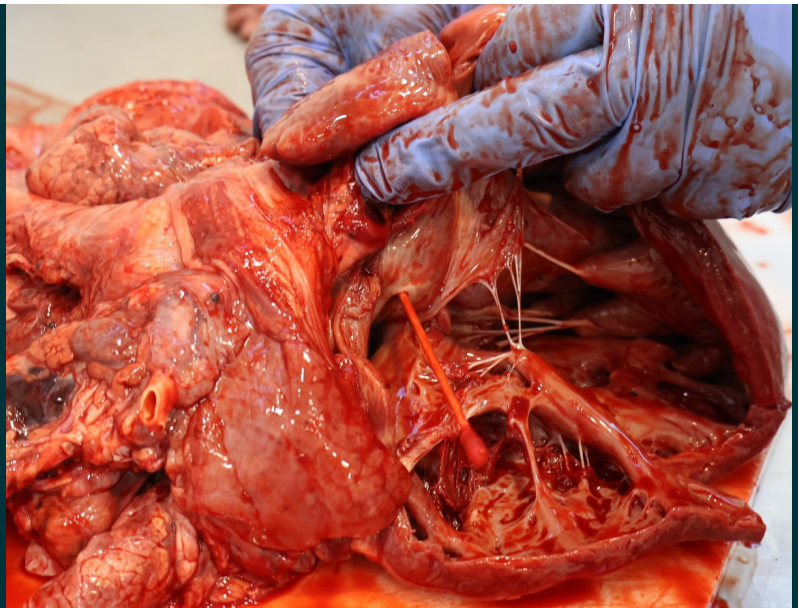

FIGURE 3: Ventricular septal wall deficit and patent foramen ovale in a calf

Neurological diseases

Thrombo-embolic meningoencephalitis (TME)

TME due to *Histophilus somni* infection was diagnosed in an eight-month-old Charollais calf submitted with a history of neurological signs. On histology there were multifocal lesions in the grey and white matter characterised by vasculitis, and necro hemorrhagic, suppurative meningo-encephalitis. There was oedema and rarefaction, with an infiltrate of viable and degenerate neutrophils, gitter cells, and the presence of ring haemorrhages. There were intra-lesional bacterial colonies present and *H. somni* was recovered in moderate growth from the brain. This calf also had black leg lesions in the heart with *Clostridium chauvoei* demonstrated by immunofluorescence and a necrotizing fibrinoid laryngitis.

Urinary tract diseases

Urolithiasis

Urolithiasis was diagnosed in a three-month-old steer. At necropsy there was fibrinous inflammation of the serosal surface of the bladder and adhesions to surrounding structures. There was a 4 cm diameter pale yellow lesion on the bladder mucosa where the mucosa was roughened and discoloured. Urine was cloudy. There was a 2 cm x 1 cm cylindrical shaped rubbery mass in the bladder lumen. There was swelling along the ventrum, particularly at the prepuce, extending caudally to the pelvis, extending down the left hind leg to the claws, and extending cranially to the lower neck. There was oedema and watery fluid in subcutaneous tissue in these areas with a urine smell of the tissue. There was a diffuse fibrinous peritonitis. Both kidneys were swollen. There were multifocal to coalescing pale grey necrotic lesions in renal cortices, involving about 30% of renal cortex. There was focal necrosis and discolouration of the urethral mucosa just proximal to the sigmoid flexure. There were several 1-2 cm grey plugs of rubbery material in the lumen of the distal urethra.

Other diseases of cattle

Babesiosis

Babesiosis was diagnosed in a three-year-old Dexter cow from an area known to be at risk from red water fever during the tick season. The case was considered unusual because it occurred in early January and live engorged ticks were present in the inguinal and mammary regions. Gross post mortem examination identified a pale carcass with ‘port wine’ coloured urine. Giemsa stained blood smears identified singular and paired spherical bodies within erythrocytes confirmatory for babesiosis. Diagnosis was further confirmed by RT-PCR (DAFM, Ireland).

Black disease

A dehydrated and toxic cow was submitted for post mortem examination when it failed to respond to treatment. On post mortem examination the carcase was extremely toxaemic with ‘fiery red’ omentum. A firm pale lesion was present in the liver and was culture positive for *Clostridium novyi*. Black disease was diagnosed.

Endocarditis

Vegetative endocarditis associated with alpha haemolytic *Streptococcal* infection was diagnosed on full post mortem examination of a ten - month-old heifer which had died following a period of lethargy and dyspnoea. Grossly, the right side of the heart was enlarged and there was a very large vegetative lesion extending across the tricuspid valve (FIGURE 4). Ascites, hepatic congestion and generalized oedema associated with congestive heart failure were also present. A profuse growth of an alpha haemolytic *Streptococcus* sp. was recovered from the lesion.

FIGURE 4: Endocarditis in a heifer, the vegetative lesion on the tricuspid valve can clearly be seen

SMALL RUMINANTS: SHEEP

Respiratory diseases

Jaagsiekte (OPA)

Ovine pulmonary adenocarcinoma (OPA) was diagnosed in a four-year-old ewe submitted with a history of ill thrift, coughing and nasal discharge. At necropsy characteristic gross lesions were present in the lungs in association with extensive secondary abscessation associated with *Trueperella pyogenes* infection. Histology was also typical of the condition and in this case, there was extension of the neoplastic lesions into the mediastinal lymph nodes. This is relatively rare and, in this case, may be associated with the fact that the lung lesions were extensive and advanced.

Alimentary diseases

Parasitism and ovine white liver disease (OWLD)

Fasciolosis and parasitic gastro-enteritis (PGE) were diagnosed in two hill ewes. One black faced, horned ewe was only 28kg and was jaundiced with a very fatty liver. Histopathology showed severe zonal hepatocyte macro-vacuolation considered consistent with OWLD . There was also biliary ductal proliferation and macrophage infiltration of periportal areas which contained a golden pigment (haemosiderin), such changes are consistent with fasciolosis.

Nutritional and metabolic disease

A ram was presented following a short history of acute abdominal pain which did not respond to treatment. On examination a large number of leaves and sprigs of leaves were present in the rumen and had the appearance of *Pieris* species such as the ornamental shrub Forest Flame. *Pieris* is from the same family of plants as Rhododendron, the plants contain the toxin acetylandromedol and can cause severe poisoning to animals.

Reproductive diseases

Abortion

Enzootic abortion (*Chlamydophila abortus*) and abortion due to *Toxoplasma gondii* were the two most common causes of abortion recorded during the quarter. *Listeria monocytogenes* and *Campylobacter jejuni* infections were the third and fourth most recorded diagnosis of ovine abortion respectively.

Metritis

Metritis, hypocalcaemia and severe parasitic gastro-enteritis (PGE) were diagnosed in a two-year-old ewe which collapsed and died around one week after lambing. Profuse mixed growths were recovered from uterine cultures with *Clostridium perfringens, Staphylococcus aureus, Trueperella pyogenes* and *Arcanobacterium pluranimalium* all being present.

Prolapse in ewes

Several cases of vaginal or uterine prolapse were presented during the reporting period associated with over- condition ewes in late pregnancy. In one instance there had been explosive herniation of abdominal viscera into the chest cavity through a diaphragmatic laceration. The aetiology of prolapse is not fully understood but over- condition with large amounts of intra-abdominal fat, presence of multiple large lambs in utero and rumen fill due to bulky low density feeds have all been implicated.

Urinary tract disease

Nephrosis

Nephrosis was diagnosed in a five-week-old lamb. Histologically there was dilation of the collecting tubules with eosinophilic non-cellular material present, and there was tubulo-epithelial necrosis. Nephrosis in lambs is associated with D-lactate acidosis but the precise causation is unclear.

BIRDS: Poultry

Red mite infestation

Sudden deaths in laying hens occurred and three birds were submitted for examination. All three carcases had numerous mites present amongst the feathers, especially under the wings and along the back. There were numerous live mites (identified as *Dermanyssus gallinae*) present in the transport bags. The birds, which were in-lay, were anaemic and rather dehydrated.