Northern Ireland Disease Surveillance Report, January to March 2025

HIGHLIGHTS

- Myeloencephalitis due to sarcocytsosis in a lamb
- Embolic pneumonia subsequent to udder cleft dermatitis
- Copper poisoning in a calf
- Abomasitis due to Pasteurella in a lamb
- Atresia jejuni in a calf

These are some of the matters discussed in the Northern Ireland animal disease surveillance quarterly report for January to March 2025

CATTLE:

Respiratory diseases

Embolic Pneumonia

A dairy cow was found to have chronic embolic pneumonia with multiple purulent and necrotic foci throughout all lung lobes. There was suppurative pleuritis and areas of emphysematous bullae, consolidation and fibrosis in the lungs. A large circular area of ulceration of the skin of the cranial udder was also noted with extension into the udder parenchyma with associated haemorrhage, necrosis and abscessation. It is likely the source of the embolic pneumonia was bacteria spreading via the blood stream from the udder cleft dermatitis (UCD). UCD is an increasing problem in dairy herds and has been associated with multiple factors including breed, age and environment including hygiene and cubicle type.

BRD (Bovine Respiratory Disease)

A 2-week-old calf was found to have consolidation of the cranioventral lung lobes with multi focal abscessation on gross postmortem examination. Histology confirmed severe bronchiectasis progressing to coagulative necrosis and abscessation with syncytia evident and toxic modification of neutrophils within alveoli. *Mycoplasma bovis* was confirmed on PCR along with *Bibersteinia trehalosi* by culture and BRSV on IFAT consistent with gross and histological findings. BVDV was also detected by PCR suspected to be causing immunosuppression and subsequent multiagent pneumonia.

Alimentary diseases

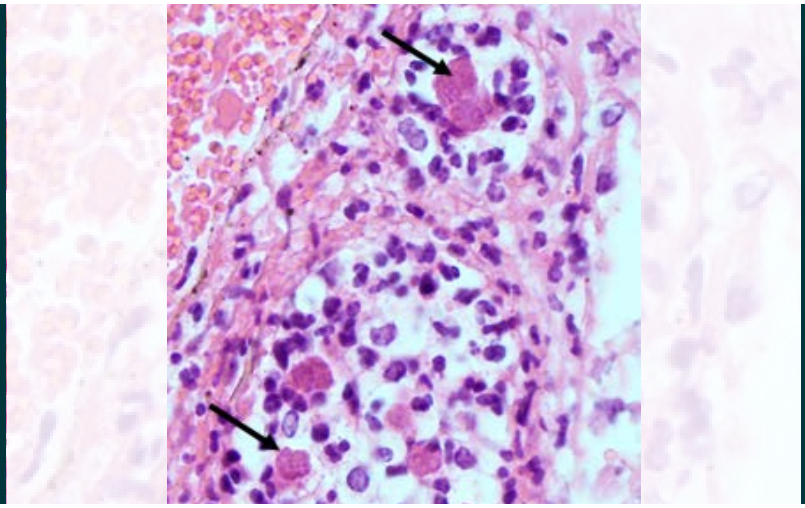
Neonatal enteritis

A 2-week-old calf was submitted following a 24-hour history of diarrhoea. Gross postmortem examination identified enteritis with omphalitis and dehydration. A high level of *Cryptosporidium* oocysts was detected in the faeces along with a positive ELISA result for rotavirus, coronavirus and *E. coli* K99, all of which are known causes of neonatal diarrhoea. Zinc sulphate turbidity (ZST) was 8 which is below the recommended value, indicative of inadequate colostrum antibody absorption. This case highlights the multifactorial nature of calf diarrhoea related to environmental hygiene, navel treatment and colostrum feeding.

Other enteric conditions

Abomasal ulceration

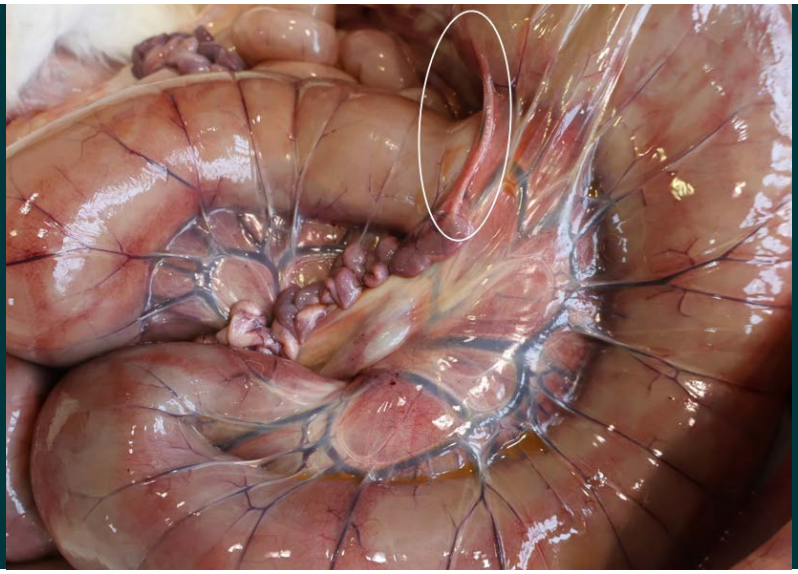
Abomasal perforation and peritonitis was detected in a 6-week-old calf due to ulceration at the pylorus. Histology confirmed the presence of tetrads and octads of Sarcina bacteria (picture 1) on the serosal surface of both the abomasum and liver along with a fibrinous and acute inflammatory exudate. Sarcina has been associated with abomasal bloat and mucosal ulceration in young ruminants on a milk diet, which provides Sarcina with a fermentable substrate and a low pH environment.



PICTURE 1: Black arrows depict Sarcina bacteria

Atresia jejuni

A 3-day old Simmental calf was submitted for postmortem examination after being dull since birth. On opening the abdomen there was marked distension of the abomasum and proximal small intestine. There was a non-patent connective tissue band (picture 2) joining two sections of jejunum. Aboral to this band the intestines were collapsed and empty. This is a case of atresia jejuni type II or cord atresia. Atresia can occur in multiple areas of the intestinal tract due to congenital issues with Holstein Friesians being overrepresented.



PICTURE 2: White oval depicts Atresia jejuni in a calf

Nutritional and metabolic disease

Hypomagnesia

Hypomagnesaemia was detected in 3 cows submitted following at least 7 deaths in a 6-week period. The animals were all cows around 10 years old and were indoors for fattening on a combination of hay, silage, urea and bread mix. Animals presented with neurological signs and hyperaesthesia prior to death. Hypomagnesaemia was indicated by the magnesium levels in the vitreous humour ranging between 0.47 and 0.5mM. It was suspected that the high level of bread feeding may have predisposed the cows to tetany. Screening cohort animals for blood magnesium and calcium level was advised.

Copper Poisoning

Copper poisoning was detected in a 4-month-old calf indoors on meal. Gross postmortem examination detected a jaundiced carcass with yellow discolouration of the liver and subcutis along with bloody urine and distended dark coloured kidneys. Histology detected severe centrilobular and mid-zonal hepatic parenchymal necrosis with tubuloepithelial necrosis in the kidney. Rubeanic acid staining of kidney and liver gave positive results for copper, and copper analysis gave results in the toxic range for both organs.

Reproductive and mammary diseases

Abortion

In comparison to this quarter last year there has been a 4% rise in the number of *Trueperella pyogenes* abortions detected. However, there was a decrease of 4% in both abortions due to *Bacillus licheniformis* and BVDV, with only 1 BVDV abortion detected in this quarter which could relate to the ongoing progress in the BVDV eradication scheme.

Salmonella species are frequently detected in abortion cases and one foetus had *Salmonella* Kottbus isolated in pure culture from its stomach contents. The farm had a history of multiple abortions in its heifer group. Kottbus is infrequently isolated from cattle and similarly to other serotypes of *Salmonella* is recognised as a cause of abortion and diarrhoea.

Other reproductive diseases

Uterine Artery Tear

Three dairy cows were found to have uterine arterial tears following gross postmortem examination. Both carcases were pale with haemorrhage into the abdomen, retroperitoneal space and uterine mural wall. Two cows had a late gestation bull calf present in their uterus while the other had already calved. One cow had secondary rupture of the caudoventral flank with haemorrhage between the muscle layers.

Mammary diseases

Mastitis

A cow was submitted following sudden death, which was the second death in the dry cows in a week. Gross postmortem examination found one quarter of the udder was swollen and congested with teat sealant present. The carcass appeared congested and had a near full term calf in utero. *Pasteurella multocida* was cultured from the udder, liver and lung tissue. Bacterial colonies with associated inflammation were evident in the mammary on histopathology. These findings confirmed the diagnosis of toxic mastitis.

Neurological diseases

Spinal Abscess

A 2-year-old heifer was submitted after a history of being unable rise. Gross postmortem examination identified a large abscess surrounding the ventral body of the vertebrae at the thoracolumbar junction with associated osteomyelitis. Histology confirmed the abscess involved the spinal canal causing severe acute spinal meningitis. This lesion may have occurred because of a previous traumatic injury.

Other diseases of cattle

Cardiac Abscess

A cardiac abscess (picture 3) was detected in an 18-month-old bullock submitted for postmortem examination following sudden death. The abscess was roughly 10cm in diameter and extended from the ventricular septum into the left ventricle and was filled with purulent material. Bacteriology isolated *Trueperella pyogenes* in the abscess. The bullock had a history of lameness in November which may have been a source of bacterial emboli for this abscess.

Calving Trauma

A 2-week-old calf was submitted with a history of a posterior presentation with traction required at birth, and subsequent difficulty rising. There was swelling of the left thigh with a displaced fracture of the distal femur and associated tissue haemorrhage, necrosis and abscessation. There was evidence of purulent material in multiple joints, and the umbilical vein related to omphalitis and suppuration in the liver. ZST was inadequate at 2 which is possibly a consequence of the calf's difficulty in ambulating. Salmonella Dublin was isolated from multiple organs along with *Trueperella pyogenes*.

PICTURE 3: Cardiac abscess in the heart of a bullock

Alimentary diseases

Intestinal torsions

Six lambs less than 1 month old were diagnosed with intestinal torsion or 'red gut'. Gross postmortem examination identified between 180-to-360-degree torsion of the mesentery of the intestines. The carcasses were pale, and the affected intestines appeared congested and distended with haemorrhagic fluid contents (picture 4). Excess readily fermentable carbohydrates is linked to intestinal torsion often due to introduction of creep feeding but it is also related to increased activity with one lamb diagnosed with torsion after vaccination.

PICTURE 4: Intestinal torsion in a lamb

Abomasitis

A 4-week-old lamb was presented after a short period of recumbency and hypothermia. The abomasum was thickened and emphysematous with ulcers on the mucosal surface. Histology identified the submucosa was distended by gas and contained bacterial colonies, fibrin and degenerative inflammatory cells with *Bibersteinia trehalosi* isolated. *Pasteurella* spp. have been previously reported as a cause of abomasitis in lambs.

Parasitic Gastroenteritis (PGE)

PGE was detected in a 3-year-old ewe in poor body condition with diarrhoea and a short period of inappetence. High strongyle egg count of 12,400 epg due to trichostrongylosis was detected with over 20,000 of each *T.circumcincta* and *T.vitrinus* in the abomasum and small intestine respectively.

Caecal torsion

Caecal torsion was detected in a 3-year-old ewe submitted after a period of lethargy while outdoors on grass. The carcass was pale, and the displaced caecum was congested containing bloody fluid. Previous reported cases of caecal torsion noted a seasonal distribution with a relationship to lush grass or a sudden change in diet.

Reproductive diseases

Uterine torsion

A 360-degree uterine torsion of the uterine body was detected in a 1-year-old ewe. The uterus was red-black in colour with a single 6.5kg male lamb present and haemorrhage into the placenta. The cervix was closed and the mucous plug present.

Vaginal Prolapse and perforation

Multiple sheep were submitted with evidence of vaginal prolapse on gross postmortem examination with subsequent vaginal perforation and prolapse of sections of intestine. Vaginal prolapse is often a multifactorial problem, with these sheep weighing around 100kg, in overweight body condition and carrying multiple pregnancies in late gestation.

Abortion

There was an increase in ovine abortion and stillbirth submissions in this quarter with enzootic abortion of ewes (EAE) and toxoplasmosis accounting for 15% each of all diagnoses. Other bacterial pathogens such as *Campylobacter* spp. and *Listeria* spp. accounted for 7% of abortions each.

Neurological diseases

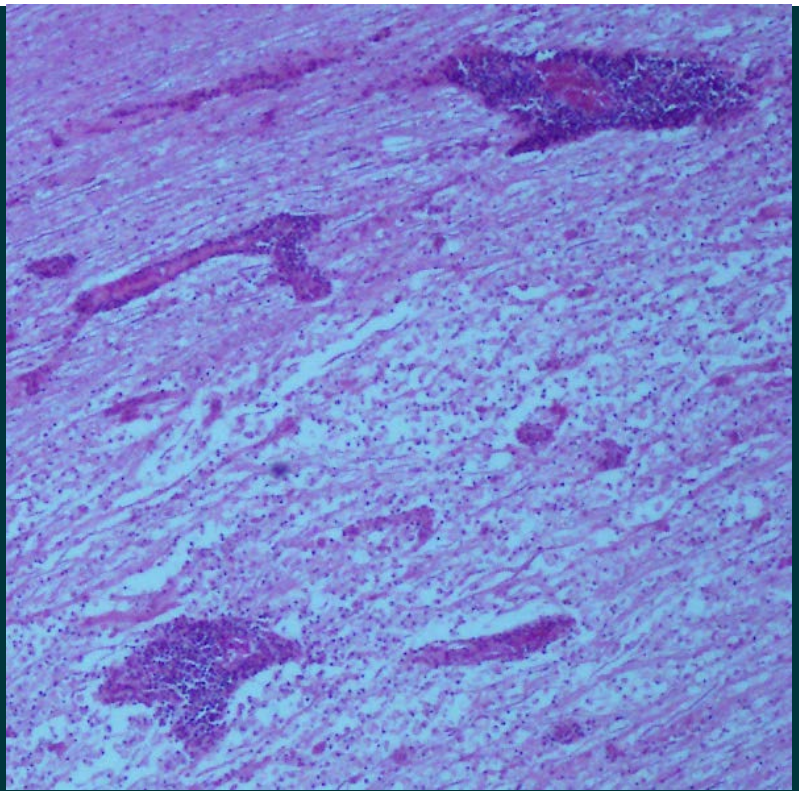
Sarcocystosis

An 8-month-old lamb was submitted for postmortem examination following paresis of the hindlimbs and paddling of the forelimbs. There had been six other cases with similar presentation on this farm. Gross postmortem examination didn't detect any gross lesions however on histology of the spinal cord and brain, there was perivascular cuffing (picture 5- next page) consisting of mainly lymphocytes which extended into the surrounding tissue with areas of malacia also evident. Lesions were seen in the brainstem and along the length of the spinal cord from cervical to sacral. Occasional basophilic foci were seen suggestive of the presence of a protozoan organism with PCR of the brain confirming *Sarcocystis tenella* or *S. ovicanis* infection. This is a dog sheep protozoan parasite with sheep as the intermediate host. Infections are usually chronic and asymptomatic with microscopic muscle cysts (sarcocysts) found incidentally, however in heavy infections myositis or, as in this case myeloencephalitis has been reported in lambs.

Urinary tract disease

Urolithiasis

A 6-month-old Valais Blacknose ram had evidence of urolithiasis on gross postmortem examination. There was a thick paste like material in the distal penile urethra with associated oedema and haemorrhage of the urethral mucosa. Profuse amber fluid was identified in the subcutaneous tissues of the abdomen and thorax which smelt of urine indicative of urine leakage. Urolithiasis is seen more often in male castrated small ruminants and is a multifactorial issue related to low roughage and high protein diets, the mineral composition of the diet, water intake and genetics.



PICTURE 5: Histopathology image of perivascular cuffing in the spinal cord

Other diseases of sheep

Listeria Septicaemia

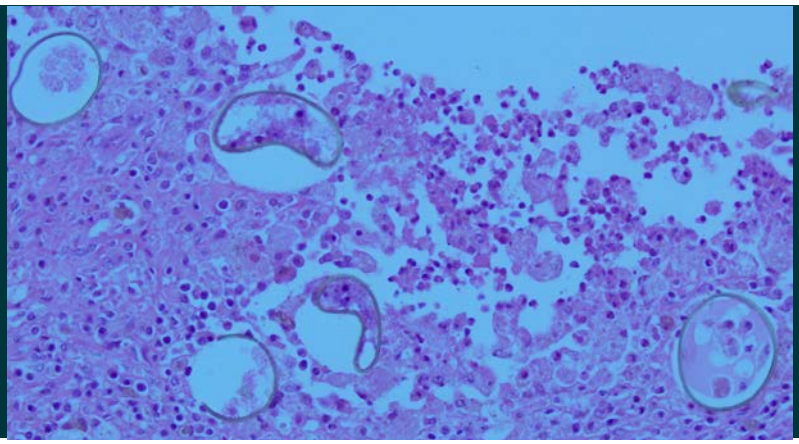
Listeria monocytogenes septicaemia was detected in two 1 week old lambs submitted following sudden death. Pale petechial lesions were evident on the liver grossly which were consistent with areas of hepatic necrosis containing bacteria, fibrin and degenerate neutrophils on histology. *Listeria* septicaemia is most seen in lambs. However, it can also occur in adult animals with a 1-year-old hogget on silage being submitted following sudden death; *Listeria* spp. was isolated from multiple organs and histology identified areas of hepatic necrosis.

ALPACAS:

A 7-month-old alpaca was submitted following sudden death. Gross postmortem examination identified multiple nodules throughout the liver with adult flukes identified in the bile ducts. The nodules mainly contained thick mucoid green fluid. Histology of the liver identified disruption of normal liver architecture and extensive areas of biliary hyperplasia. There were also multifocal granulomas along with frequent thin shelled, ellipsoid structures consistent with *Fasciola hepatica* ova (picture 6). These findings confirmed chronic fascioliasis with a severe accentuated host reaction to *Fasciola* ova. Similar liver changes have been reported previously in an adult alpaca in response to liver fluke ova.

HORSES:

A 16-year-old mare that was seven weeks off foaling was submitted following sudden death while out on pasture. Gross postmortem examination identified a nephrosplenic entrapment (left dorsal displacement). The left dorsal and ventral colon had displaced over the nephrosplenic ligament which connects the kidney and spleen. There was ischemic necrosis of the colonic wall with associated haemorrhage, ingesta leakage and fibrous peritonitis.



PICTURE 6: Fasciola hepatica ova in the liver of an alpaca

PIGS:

Intestinal torsion was detected in a 21-week-old pig following gross postmortem examination. The small intestine was congested, distended with gas and had haemorrhagic contents with a palpable torsion in the mesentery. Intestinal torsion in grower pigs is often connected to a low fibre high energy diet, overeating or too much wet feed.

WILDLIFE and EXOTICS:

A 21-year-old Lion was submitted following euthanasia due to mobility issues, with polydipsia also being noted. Gross postmortem examination identified multifocal, multilocular cysts filled with yellow fluid throughout the liver (picture 7). Histology of the liver identified dilated variable sized structures extending from the periportal areas. These structures were lined by a simple epithelium which was non mucin producing on Alcian Blue stain. There was proliferation of bile ducts with associated proliferation of mature collagen and fibrous tissue, confirmed by positive Masson's stain.

PICTURE 7: Peribiliary cysts in the liver of a lion

This tumor is consistent with previously reported findings of spontaneous peribiliary cysts in lions in other countries. A red lesion on the larynx was also noted which was confirmed as Squamous Cell Carcinoma on histology. There were pale yellow areas seen in the medulla of the kidney, with histology confirming amyloidosis on Congo Red stain. This case serves as a reminder of the multiple disease processes which can occur in aged animals.

To allow prevention and preparation for the upcoming months it is worth noting these cases were identified in Northern Ireland in April to June over the last 4 years:

- **Parasitic:** Last year there was a rise in submission of both sheep and alpacas dying from Haemonchus ('Barber pole') infection. Coccidiosis and nematodirosis are often diagnosed in animals particularly lambs. The Nematodirus forecast should be monitored to determine egg hatch and at-risk period.
- **Poisoning:** Cattle at grass poisoned by lead or pyrrolizidine alkaloid due to the ingestion of Ragwort.
- **Myopathy:** Nutritional myopathy and cardiomyopathy are seen in young calves and lambs.
- **Blackleg** caused by *clostridia* can be detected in cattle both at grass and indoors.