

OVERVIEW

- **Osteodystrophy in dairy heifers outwintered on fodder beet**
- **Himb limb paresis associated with protozoal encephalomyelitis in a hogg**
- **Listerial enteritis associated with feeding spoiled silage**

GENERAL INTRODUCTION

The mean temperature in March was 0.9°C above the long-term average and it was particularly mild by day. Rainfall ranged from just above normal in parts of Aberdeenshire to well below normal in the far north-west with a Scotland wide figure of 50 per cent. Sunshine was above normal especially in the west and a figure of 164 per cent of average made it the sunniest March in a series since 1919.

DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in June 2021. Given similar climatic and production conditions, they could also be important this year.

- **Coccidiosis due to *Eimeria alabamensis***
Eimeria alabamensis is associated with diarrhoea in calves one to two weeks after turn-out. The pre-patent period of six to eight days is much shorter than for other bovine coccidial species. Diarrhoea may develop before oocysts can be detected and peak shedding may only last for a couple of days. It is therefore useful to sample more than one animal. The mortality rate is usually low but affected calves lose weight and the growth check can be apparent for many weeks. The oocysts will survive over-winter on pasture so disease may be seen on the same fields in consecutive years.
- **Nematodirois in lambs**
Lambs aged between six and 12 weeks are at greatest risk particularly if grazing fields used for this age group year on year. It is important to check for evidence of co-infection with other endoparasites. Concurrent coccidiosis can result in more severe clinical signs in younger lambs. The presence of high strongyle egg counts should be taken into account when selecting an appropriate anthelmintic as *Teladorsagia* sp are more likely to be benzimidazole resistant than *Nematodirus battus*.

Parasitic diseases

A three-year-old stabiliser cross cow was euthanased following a three-month history of weight loss and diarrhoea. There was no response to anthelmintic treatment and Johnes's serology proved negative. One other cow was similarly affected, and a small number were reported to be struggling to maintain body condition. The herd was housed with access to silage and concentrate feed. Postmortem examination identified marked gelatinous oedema of the abomasal folds and watery green contents. Eighty per cent of the mucosal surface was covered in multiple flat pale foci with smaller numbers on the duodenal and ileal mucosa. Histopathology confirmed extensive chronic active plasmalymphocytic and lesser eosinophilic/mastocytic abomasitis with pronounced accumulations of plasma cells particularly in the dorsal mucosa. Extensive fibrosis was noted in the superficial lamina propria and there was variable partial and occasionally complete glandular mucus metaplasia. Endoparasitism was considered to be the most likely explanation for the pathology. No nematode profiles were detected reflecting the recent treatment. Severe ostertagiasis is unusual in an animal of this age, however no other cause for the abomasitis was apparent. Submission of further faecal and blood samples from the herd was recommended.

Generalised and systemic conditions

A 50-cow suckler herd reported the deaths of six calves between the ages of six days and three months. Affected calves were dull and pyrexia and became recumbent prior to death. A five-week-old Simmental cross bull calf was submitted for investigation of the problem. It had been treated for suspected pneumonia at two-weeks of age and had appeared to recover but suddenly relapsed and died. Postmortem examination revealed a polyserositis with pleuritis, pericarditis, peritonitis, polyarthritis and meningitis. *Mannheimia haemolytica* was isolated from the brain, pleural fluid and stifle. A 20 per cent incidence of navel ill was noted and likely to be a predisposing factor in some of the losses.

A dairy herd experiencing cases of hypocalcaemia submitted a three-year-old Jersey-cross cow for postmortem examination. It was due to calve in two weeks-time and had been found recumbent and hypothermic. There was no response to treatment with calcium and magnesium and it died soon after. Postmortem examination revealed a large volume of red fluid in the abdomen and diffuse reddening of the peritoneum. A well demarcated pale, firm lesion with an irregular edge surrounded by a zone of haemorrhage was present in the caudate liver lobe (Fig 1). Mineralisation of the terminal bile ducts was noted but no adult *Fasciola hepatica* were seen. Fluorescent antibody

testing of liver was positive for *Clostridium novyi* confirming a diagnosis of infectious necrotic hepatitis (Black disease). Clostridial vaccination of the herd was recommended.

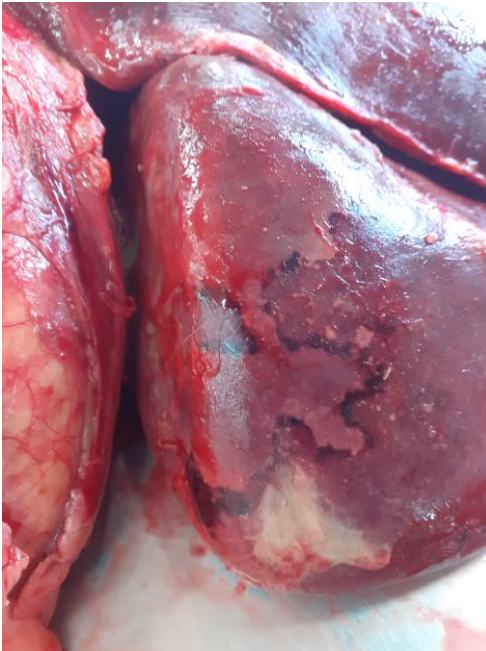


Figure 1 – Black disease lesion in the liver of a dairy cow

Alimentary tract disorders

A 13-day-old Aberdeen Angus cross heifer calf was described as being listless since birth and was suspected to have impaired vision. It developed diarrhoea and was treated with oral electrolytes but was found dead unexpectedly the following day. Other calves had been treated for diarrhoea, but most had recovered. External examination confirmed opacity of the central corneas and significant navel ill. Internally there was mild peritonitis and patchy bilateral lung consolidation. A 2 cm long full thickness tear in the oesophageal wall was found proximal to the thoracic inlet with oedema and necrosis of the surrounding tissues. There was evidence of rumen drinking and cryptosporidial oocysts were detected in the faeces. Intestinal histopathology was hampered by autolysis but extensive lesions consistent with attaching and effacing *Escherichia coli* were detected and considered to be the cause of death. Aspiration pneumonia, ulcerative keratitis and anterior uveitis were also confirmed. Improvements in hygiene and a review of stomach tubing technique were suggested as the most important measures to take.

An 11-day-old Holstein heifer calf was euthanased and submitted to investigate an outbreak of diarrhoea that

was poorly responsive to treatment. Postmortem examination findings included faecal staining, dehydration and profuse watery gastrointestinal contents. A 10 cm diameter area of mucosal necrosis surrounded by a zone of inflammation was present in the caecum but only coronavirus was detected. Histopathology revealed multiple foci of neutrophilic and thrombosing typhlocolitis with occasional dense clumps of bacilli admixed with neutrophils adjacent to the luminal aspect and within the mucosa. Foci of superficial to full thickness mucosal necrosis and loss, with neutrophil infiltration, subjacent haemorrhage, thrombosis and emphysema together with transmural fibrovascular activation were also described. The changes were consistent with subacute clostridial typhlocolitis secondary to caecal infarction and coronavirus infection. The aetiology of caecal infarction is unknown and no association with any of the common enteric pathogens has been proved.

Musculo-Skeletal conditions

A dairy herd reported diarrhoea and multi-limb lameness affecting 7 per cent of a group of 150 yearling Friesian heifers that had been strip-grazing fodder beet from September to early February. They also had access to grass, haylage was provided and mineral boluses had been administered before introduction to the fodder beet. Laminitis was suspected and affected animals appeared to make a slow recovery after being housed and provided with a hay only diet. However, one animal became recumbent in early March and was euthanased after failing to improve. Postmortem examination revealed marked diffuse subcutaneous haemorrhage and oedema of both hindlegs and a fracture of the right femur. Histopathology detected pronounced irregularity of the growth plate with extensions of disorderly degenerate cartilage into the proximal metaphysis. Layers of irregular metaphyseal spicule formation were found distal to this and large areas of cartilage within irregular dense trabeculae surrounded by loose fibrovascular tissue with minimal haematopoiesis extended into the diaphysis. These changes were consistent with a previous episode of severe metabolic bone disease with the retention of cartilage cores in the proximal diaphysis confirming rickets. Fodder beet is relatively low in both calcium and phosphorus and immediate mineral supplementation of the rest of the group was recommended.

Nervous system disorders

A five-month-old Simmental cross calf was submitted for investigation after being found dead two days after dehorning. Postmortem examination of the brain found a moderately defined area of intense congestion and darkening on the left dorsal cerebrum associated with pale sulcal opacity. Histopathology confirmed that this corresponded to an area of recent meningeal and grey matter haemorrhage, focal grey matter oedema and

neuronal necrosis, and expansion of the meninges by fibrinopurulent exudates. These findings confirmed bacterial meningoencephalitis and indicated that the dehorning site was the likely source. *Clostridium septicum* was isolated from the brain and the presence of an unusually large number of sporulated clostridial bacilli in the liver, suggested the possibility of ante mortem clostridial septicaemia.

SMALL RUMINANTS

Parasitic diseases

A farmer reported that three Scottish blackface hogs had lost the use of their hind legs in the previous three weeks. Two were ewe hogs at grass and the third was a housed tup hogg fed silage and a blend. There had been no response to treatment with antibiotics, NSAIDs and vitamin B1. One of the ewe hogs was submitted live and found to be bright but dog sitting with hind limb paresis and reduced proprioception. Postmortem examination was generally unremarkable although the cerebrospinal fluid (CSF) around the atlanto-occipital joint appeared slightly yellow. The brain and spinal cord were grossly normal, and cultures of CSF were sterile. Neuropathology identified moderately severe widespread non suppurative panencephalomyelitis with multifocal random gliosis including dense glial nodules and perivascular mononuclear cell infiltration in both white and grey matter. The most severe lesions involved spinal white matter and also included Wallerian degeneration, spheroid formation and scattered protozoal meronts in association with inflammatory foci. Large numbers of protozoal tissue cysts were noted within cardiomyocytes. The clinical signs and neuropathological findings in this case were consistent with protozoal encephalomyelitis due to *Sarcocystis* sp infection.

Alimentary tract disorders

A group of 220 Scottish blackface wethers were moved to a new area of hill and baled silage was introduced. Up to 10 per cent developed diarrhoea over the next two weeks and 11 died. Two carcasses were submitted for postmortem examination and both were found to be dehydrated and uraemic (vitreal humour urea 73.3 and 72.7 mmol/l (serum reference range 4 to 8 mmol/l)) with evidence of abomasitis, typhlocolitis and moderate parasitic gastroenteritis. Histopathology confirmed severe leucocytoclastic, neutrophilic, histiocytic and lymphoplasmacytic abomasitis with pronounced submucosal protein rich oedema. Similar changes together with intraluminal bacilli were detected in intestinal sections. These findings were consistent with listerial gastroenteritis and *Listeria monocytogenes* was isolated from the liver in one case. Further discussion

with the farmer confirmed that there was evidence of spoilage in the silage being fed. This was withdrawn but cases of suspected listerial encephalitis were subsequently seen.

The carcass of a four-year-old Texel cross ewe was submitted from a flock of 250 where there had been 12 deaths since Christmas. The ewe had been off colour for a few days and was euthanased after developing submandibular oedema and failing to respond to antibiotic treatment. Body condition was poor with evidence of a cranial peritonitis with adhesions between the liver, omentum and forestomachs. There was no evidence of active fasciolosis, the distal jejunum appeared thickened and the large intestinal contents were liquid. A blood sample tested positive for antibodies to *Mycobacterium avium paratuberculosis* and histopathology detected a histiocytic enterocolitis consistent with Johne's disease. This included transmural lymphohistiocytic enteritis of the small intestine with circumferential involvement of the serosa confirming Johne's disease associated peritonitis.

Nervous system disorders

A small number of easycare-cross lambs were seen to be shaky, weak and ataxic approximately 6 to 7 hours after birth. The flock of 1330 ewes had been housed two weeks prior to lambing with access to a total mixed ration, silage and turnips. The ewes were described as being in good body condition however cases of pregnancy toxemia were reported with most responding to treatment. Four live two-day-old lambs were submitted three of which were recumbent with opisthotonos. PCR testing for border disease virus proved negative. Histopathology detected multifocal neuronal corticonecrosis and white matter vacuolation in two. These findings suggested the possibility of hypoglycaemic encephalopathy secondary to ewe energy deficiency. It was advised that dams of affected lambs should be blood sampled within 24 hours of parturition as betahydroxybutyrate levels above the reference range at this stage confirms the diagnosis.

Circulatory system disorders

Sudden death of lambs due to myocardial degeneration was diagnosed in lambs from two flocks. In the first case a well grown three to four-week-old beltex lamb was found dead and submitted for postmortem examination. It was the only loss from a group of 30 housed lambs that did not yet have access to creep feed. A selenium drench was routinely administered at 48 hours of age. The main findings of airway froth, petechiation of the visceral pleura, an increased volume of pericardial fluid and autolysed kidneys suggested a diagnosis of clostridial enterotoxaemia type D. However, this was ruled out on histopathology which revealed multifocal to coalescing chronic polyphasic cardiac myocyte degeneration and

necrosis with marked fibrosis. The lesions were considered extensive enough to have compromised cardiac conduction leading to cardiac arrest. Pathology consistent with acute hypoxia and disseminated intravascular coagulation was noted in the liver, lung and kidney. The myocardial changes were not typical of nutritional cardiomyopathy (white muscle disease), but it could not be excluded. Analysis of liver tissue indicated that there was no selenium or vitamin E deficiency at the time of death, and it was postulated that the myocardial damage had resulted from an earlier septicaemia. (S431460)

In the second case fixed tissues from on-farm postmortem examination of two, six-week-old Texel cross lambs were submitted to investigate the sudden death of several lambs 24 to 48 hours after tagging and administration of a mineral drench. Another lamb was showing signs of respiratory disease at time of submission. The private veterinary surgeon reported fluid in the trachea and congestion and marked oedema in the lungs. Histopathology ruled out inhalation of the mineral drench as the cause of death and detected extensive myocardial degeneration. The aetiology was not clear, but a severe stress reaction was suggested as similar changes have been observed associated with unusual handling methods impairing respiration. Selenium toxicosis was also considered a possible differential however neither thoracic nor pericardial effusions were reported. It was advised that assessing selenium and vitamin E status in surviving lambs would be worthwhile as borderline antioxidant status might predispose to other insults.

Skin diseases

Crusty, pruritic lesions over the shoulders, dorsum, perineum and ventrum were described in a group of three pygmy goats, two siblings and one unrelated. The problem had started in 2021 but had failed to fully resolve despite antibiotic treatment and application of a synthetic pyrethroid following the diagnosis of biting lice. Skin biopsies were collected from one adult goat and submitted for histopathology. This revealed diffuse epidermal hyperplasia, columns of parakeratosis separated by areas of orthokeratosis and intense eosinophil dominated perivascular inflammation in the dermis. Together with the history and distribution the findings were considered consistent with ectoparasite hypersensitivity due to mites. Mite fragments were not observed in the sections examined. This was not unexpected as infection with very small numbers can perpetuate the clinical signs. The possibility of a concurrent zinc responsive dermatitis could not be excluded.