

### OVERVIEW

- **Mannheimia varigena meningitis in a neonatal Charolais calf**
- **Enteric listeriosis in ewes on a stubble field**
- **Cerebrocortical necrosis in tup hogs strip grazing kale**

### GENERAL INTRODUCTION

The north of Scotland experienced snowfall during the third week of January. This was followed by a new record maximum temperature for the month with 19.9°C recorded in Sutherland on 28<sup>th</sup> January. Despite this the mean temperature was 0.5°C below the thirty-year average (1991-2020). It was brighter and slightly drier with 133 per cent of sunshine hours and 93 per cent of average rainfall.

#### DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in April 2023. Given similar climatic and production conditions, they could also be important this year.

- **Hypogammaglobulinaemia and colisepticaemia in neonatal beef calves**  
Hypogammaglobulinaemia can result from issues with the timing, quantity or quality of colostrum ingested. Complete failure of maternal antibody transfer is a common finding in neonatal calves that have died of colisepticaemia. Metabolic profiles can be carried out three to four weeks pre-calving and should include testing for BOHB/NEFA, urea and magnesium. This will provide information on whether nutrition is adequate for the production of good quality colostrum. Low magnesium levels can predispose to hypocalcaemia and slow calving syndrome in addition to increased staggers risk.
- **Tick pyaemia in young lambs**  
A range of presentations can be seen in outbreaks of tick pyaemia including lethargy, ill thrift, death, lameness or hind limb paresis/paralysis. The possibility of tick-borne disease should not be ruled out based solely on the past history of the land or a failure to detect ticks on individual lambs. Changes in land use, grazing management and climate may alter the risk of tick-borne disease. PCR detection of *Anaplasma phagocytophilum* from EDTA blood samples or spleens from affected lambs confirms recent tick activity. *Staphylococcus aureus* may be isolated from sites of infection.

### CATTLE

#### Generalised and systemic conditions

A one-week-old Charolais bull calf was presented for postmortem examination with a history of rapid deterioration, recumbency and seizures prior to death. The calf had been born to a heifer following a straightforward assisted calving and weighed 59 kg at the time of death. It was slow to suckle so was fed with colostrum replacer for the first 24 hours. Omphalophlebitis was noted and *Mannheimia varigena* isolated from the umbilicus, liver and brain. *M. varigena* is a commensal of the upper respiratory tract and has previously been reported as a cause of fatal meningitis in neonatal calves.<sup>1</sup> *Escherichia coli* was isolated from the bladder and kidney, associated with turbid urine and unilateral mild hydronephrosis. This calf exhibited many of the risk factors associated with failure of passive transfer being male, born to a heifer following an assisted calving and having a poor suckle reflex. A ZST result of 9 units (reference range > 19 units) confirmed hypogammaglobulinaemia which will have predisposed to bacterial septicaemia despite the use of prophylactic antibiotics.

#### Respiratory tract diseases

A six-month-old Aberdeen Angus bullock was found dead and submitted for postmortem examination. It was one of 130 that had arrived from a calf rearer in September having originally been sourced from multiple holdings. IBR and *Mycoplasma bovis* vaccinations had been administered before they moved. Since then, it had been treated eight times with antibiotics and NSAIDs with the last treatment one month before death. The calves were weighed monthly, and at 96 kg it was lighter at death than when it arrived. Around 80 per cent of both lungs were consolidated with small numbers of scattered abscesses within the parenchyma. Histopathology confirmed a chronic fibrinosuppurative pneumonia. Cultures remained sterile but *Histophilus somni* and *Mycoplasma bovis* were detected on PCR testing with lower levels of PI3. The farmer was aware that the dead calf had received antibiotics for suspected pneumonia while on the calf rearer's premises illustrating the long-term welfare and financial consequences of respiratory disease.

#### Renal diseases

A nine-month-old longhorn male calf was euthanased and submitted to investigate chronic ill-thrift. It was the only affected animal from a group of 12 that were housed on a diet of silage plus a small quantity of beef nuts. Extra feed had been made available to this animal, but it failed to improve and weighed 99 kg at the time of death. The cause of the ill thrift was not apparent on

postmortem examination. Histopathology revealed a severe lymphocytic interstitial nephritis with protein casts in tubules and protein losing nephropathy was considered the most likely explanation for its poor body condition. It was postulated that the nephritis had developed secondary to neonatal bacteraemia and it was advised to review neonatal colostrum management and the ration fed to late gestation cows.

### Circulatory system disorders

A four-year-old Aberdeen Angus cow was found dead and submitted for postmortem examination. Firm fibrous adhesions were present between the reticulum and diaphragm and between the right middle lung lobe and diaphragm. A thin 10 cm long wire was found within a necrotic tract and protruding from the right middle lobe. There were also adhesions between the left cranial lung lobe and diaphragm, and a firm swelling at this site contained a central core of necrosis and fibrin. A small puncture wound was noted in the pericardium overlying a larger defect and haemorrhage within the epicardium of the right atrium. The cause of death was likely septicaemia secondary to these traumatic lesions but cardiac arrhythmia could not be excluded.

### Skin diseases

A five-year-old Jersey cross cow was submitted for postmortem examination after it became the second dry cow to be found dead over a short period of time. The skin over the ventral abdomen was markedly thickened (up to 9 cm width) from the pubis to the xiphisternum and extending onto the left ventral thorax. Multiple 0.5 to 2 cm cavitations were present within the skin and in localised areas infection and necrosis extended into the underlying muscle. No wounds or foreign bodies were detected. Petechial haemorrhages were found throughout the lung parenchyma with occasional areas of similar cavitations in the diaphragmatic lobes. Anaerobic cultures produced growths of *Bacteroides* sp from the lung and *Prevotella* sp from the skin both of which are common isolates from areas of tissue necrosis. Histopathology confirmed cellulitis with vascular thrombosis, vasculitis and intralesional bacteria found in the skin, spleen, lung, liver and kidney. The origin of the cellulitis was remained unknown but historical administration of calcium was suggested as a possibility.

## SMALL RUMINANTS

### Generalised and systemic conditions

The carcasses of four Cheviot mule ewes were submitted to investigate ill thrift and death in a group of 660 sheep some of which had lost weight post-tupping. At least four had died and several others were ill following a recent move onto a stubble field with supplementary silage. Body condition was poor with evidence of

diarrhoea in two. Abomasitis and typhlocolitis were evident in the fresher carcasses and confirmed on histopathology. The distribution of the lesions was typical of enteric listeriosis and *Listeria monocytogenes* was isolated from several tissues including lung, liver and brain. Five Cheviot tups from the same farm were also reported to be diarrhoeic following a change of diet to straw and a high energy nut. One died and enteric listeriosis was also diagnosed on histopathology in this case. *L monocytogenes* is ubiquitous in soil and can also be found in the gastrointestinal tract of healthy animals. Exposure to the bacteria occurs following contamination of feed with soil or faeces. Poor quality silage is a known risk factor for disease; however, outbreaks can be associated with other forage types.

A 5500 ewe hill/upland flock reported widespread ill thrift and the loss of 50 lambs over a few weeks. Three eight-month-old Scottish blackface lambs were submitted live and found to be very weak and in moderate to poor body condition. Halitosis was evident in one and found to result from ulceration of the oral cavity (Fig 1), oesophagus and omasum. *Fusobacterium necrophorum* was isolated from the lesions confirming a diagnosis of necrobacillosis. Histopathology revealed foci of necrosis and suppurative inflammation associated with abundant colonies of filamentous bacteria in the liver consistent with systemic spread of *F necrophorum*. Lungworm, bacterial pneumonia due to *Pasteurellaceae* spp bacteria and parasitic gastroenteritis were confirmed in all three animals with an additional diagnosis of ovine pulmonary adenocarcinoma in the third, despite the young age. Examination of several carcasses can result in multiple diagnoses and help establish the main issue.



Figure 1 – *Fusobacterium necrophorum* infection in the oropharynx of a lamb

Three ewes from a flock of 400 lost condition and died. The fourth, a Suffolk cross, was noticed to be leaner than its flock mates around six weeks before it was euthanased for investigation of the problem. It was at grass with no supplementary feeding and had remained bright with a good appetite. Postmortem examination found it to be very thin with body cavity effusions suggesting hypoalbuminaemia. The abomasal mucosa was oedematous and the mucosa of the small intestine was yellow tinged and slightly thickened. The yellow discolouration continued into the caecum and colon and the faeces were diarrhoeic. A ZN smear of ileum proved positive confirming a diagnosis of Johnes disease. Pigmented strains of Johnes disease are strongly sheep-associated with a lower risk of transmission to cattle.

#### **Nervous system disorders**

Three nine-month-old Scottish blackface tups were examined postmortem following an outbreak of neurological disease that affected 10 per cent of a group of 100 animals strip grazing kale with access to big bale silage and concentrates. Recumbency, paddling, opisthotonus and nystagmus were reported. Six of the ten animals had died with some response to treatment with vitamin B1 and corticosteroids in the others. Two of the three brains fluoresced under ultraviolet light and the third showed evidence of cerebellar coning but no fluorescence. Cerebrocortical necrosis was suspected and confirmed on histopathology which detected severe multifocal laminar necrosis. It was not clear what had triggered the outbreak. Little long fibre was present within the rumen contents at the time of death but there had been no recent changes to the diet.

#### **Circulatory system disorders**

A full-mouthed Suffolk cross ewe was found dead at grass. It was the only loss from a group of 240 ewes that were due to start lambing in six weeks. The conjunctivae were pale and free blood and large blood clots were found within the abdomen. The spleen was very enlarged and contained a 10 cm diameter mass with a cystic appearance on section. This had ruptured and was the source of the blood. The liver was also enlarged with multiple 2 to 5 mm grey to black firm nodules throughout the parenchyma. Similar lesions were found within the hepatic lymph nodes. Despite these findings the ewe was in good body condition. A splenic haemangiosarcoma was suspected and confirmed on histopathology.

## **MISCELLANEOUS**

### **Camelids**

A three-year-old male huacaya was slow to eat on the day before it was found dead. It was the only loss from a herd of 60 alpacas and was reported to have been chronically ill thriven. Postmortem examination revealed peritonitis with a thick fibrinous deposit on the C3 stomach compartment serosa overlying a full thickness defect in the wall (Fig 2). Peritonitis had occurred secondary to perforation of a deep 7 cm diameter necrotic ulcer followed by leakage of stomach contents into the abdominal cavity. Gastric ulcers are challenging to diagnose in the live animal and are most commonly located in the acid secreting distal portion of C3.<sup>2</sup>



**Figure 2 – Perforated gastric ulcer in a huacaya**

#### **References:**

- 1 - Catry B, Opsomer G, Decostere A *et al.* Fatal meningitis in a calf caused by *Mannheimia varigena*. *Res Vet Sci* 2004; 77(3):187-8.
- 2 – Neubert S, Puff C, Kleinschmidt S. *et al.* Gastric ulcers in alpacas – clinical, laboratory and pathological findings. *Front Vet Sci* 2022; 9: doi:10.3389/fvets.2022.877257