

### OVERVIEW

- **Bovine astrovirus as a cause of encephalitis in cattle**
- **Ovine herpesvirus 2 causing systemic vasculitis in sheep**
- **Losses due to yersiniosis in dairy heifers and red deer calves**

#### DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in March 2025. Given similar climatic and production conditions, they could also be important this year.

#### **Hypogammaglobulinemia and colisepticaemia in calves**

Hypogammaglobulinaemia results 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. Calves born following prolonged or assisted calvings are at increased risk as are any calves that have a poor suck reflex. Identifying these high-risk calves promptly can allow them to be managed appropriately.

#### **Mastitis in ewes**

*Mannheimia haemolytica* can be present in the oropharynx of lambs and transferred to the teats during feeding. Skin lesions, for example, orf or teat damage caused by vigorous suckling when milk supply is poor can increase mastitis risk. Depending on history, checking protein adequacy of the ewe ration, evaluation of body condition, assessment of the environment and screening for maedi visna virus, can be indicated when investigating mastitis outbreaks.

### GENERAL INTRODUCTION

The whole of Scotland experienced mean temperatures between 0.5 and 2.5°C above the 1991 to 2020 average for December. Rainfall totalled 88 per cent of the thirty-year average with very dry conditions in the North-East and only Dumfriesshire having above average rainfall. Only 27.1 hours of sunshine were recorded equating to 91 per cent of the average figure for 1991 to 2020.

#### CATTLE

##### **Alimentary tract disorders**

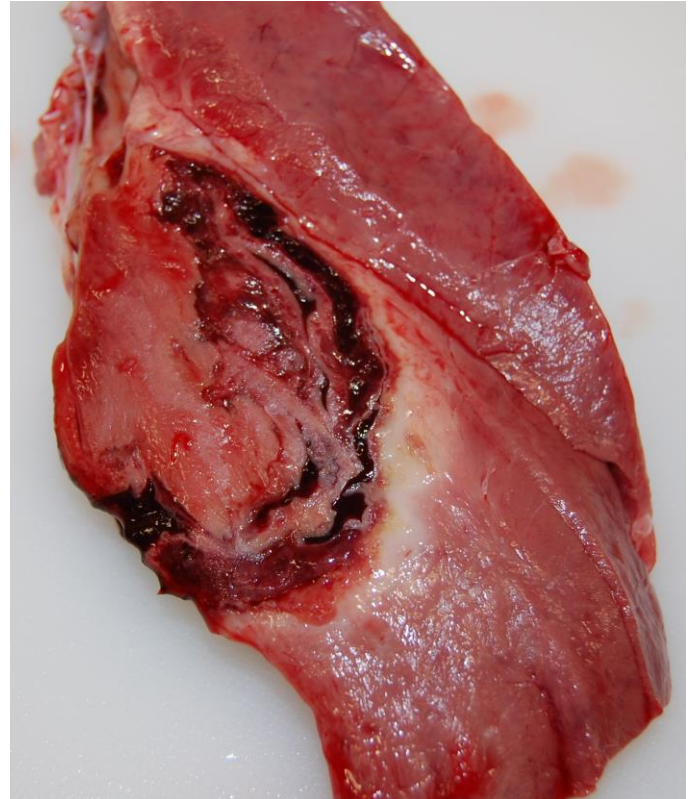
A group of 240 dairy heifers was managed together until late October when the 140 heaviest were gradually introduced to fodder beet with access to silage and grass. The other 100 were housed and four weeks later three eight-month-old heifers from this group were submitted for postmortem examination following the death of six. Affected animals were reported to become recumbent and die within 24 hours. All three carcasses were thin with little body fat and variable evidence of gastrointestinal pathology including abomasal ulceration, *Ostertagia* sp damage to the abomasal mucosa, inflammation and thickening of the small intestine plus diarrhoea. Localised pneumonia due to *Mycoplasma bovis* and *Trueperella pyogenes* infection was confirmed in one case. Strongyle egg counts were 2,600, 50 and 100 eggs per gram (epg) and histopathology confirmed abomasal and small intestinal endoparasitism in all three plus coccidiosis in one. Anthelmintic treatment had been administered two months previously, and any persistent effect would have lapsed. *Yersinia pseudotuberculosis* was isolated from the ileum in one case, and histopathology identified crypt abscesses with large bacterial colonies typical of *Yersinia* sp. Both groups of heifers were treated with doramectin however 12 animals from the group grazing fodder beet were found dead over the course of the next week.

Others were reported to be sunken eyed, but no diarrhoea was observed. Two were examined postmortem and were in good body condition with plentiful body fat. The mucosa of the mid to distal small intestine appeared inflamed and large intestinal contents were liquid. *Yersinia pseudotuberculosis* was isolated from the ileum of both, and histopathology was consistent with acute bacterial enteritis due to yersiniosis with additional damage due to endoparasitism. Liver selenium results were consistently below the reference range, and it was proposed that both hyposelanos and parasitic gastroenteritis could have predisposed to yersiniosis. Wet conditions have been suggested to increase susceptibility to yersiniosis and ingestion of soil along with the fodder beet could have been a risk factor. Trace element boluses were administered, the outdoor group were housed, and the worst affected animals were treated with oxytetracycline. Deaths ceased and there was a gradual overall improvement in health. Future monitoring of worm burdens and trace element status during the autumn was recommended.

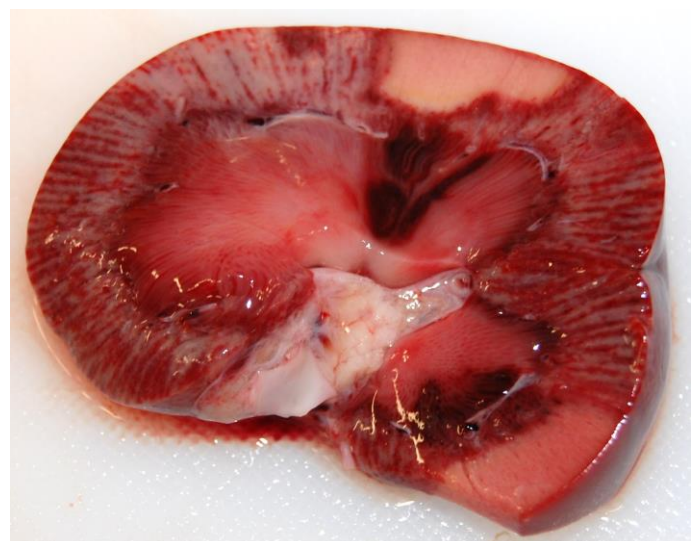
### Respiratory tract diseases

An eight-month-old Charolais heifer became pyrexia and died a week later despite repeated antimicrobial and anti-inflammatory treatments. It was the second death in a group of 40 spring born calves and the carcass was submitted for postmortem examination. This identified multiple pathologies including pulmonary oedema with focal lung consolidation, severe necrosis of the left ventricular papillary muscle (Fig 1), renal infarctions (Fig 2), septic arthritis and abomasal ulceration. Bacterial cultures remained sterile, perhaps as a result of antimicrobial treatment, and PCR testing of lung failed to detect any respiratory pathogens. However, PCR testing of myocardium was positive for *Histophilus somni* and histopathology confirmed necrosuppurative myocarditis with fibrinous pneumonia along with renal infarction and hepatic necrosis. Overall, the

findings were consistent with *H. somni* septicaemia, highlighting this as a cause of mortality in growing cattle.



**Figure 1 – Myocarditis due to *Histophilus somni* infection**



**Figure 2 – Renal infarction as a result of *Histophilus somni* septicaemia**

A ten-week-old Aberdeen Angus cross calf was submitted from a dairy beef calf rearer unit. It had arrived at three weeks-of-age and was subsequently vaccinated for *Mycoplasma bovis*, *Histophilus somni*, bovine respiratory syncytial virus, bovine parainfluenza 3 and bovine herpesvirus 1. It then required multiple courses of antibiotics/NSAIDs and failed to gain weight in the four weeks between weaning and submission. Postmortem examination identified consolidation of the right anterior lung lobe. Several calves had been reported with droopy ears and examination of the ear canals of the submitted calf revealed bilateral otitis media. *Mycoplasma bovis* was detected on PCR testing of lung and an ear swab. It is possible that mycoplasmal lung lesions were already present prior to vaccination.

### **Nervous system disorders**

The carcase of a 20-month-old Charolais cross was presented to investigate the cause of neurological signs in two animals from a group of 30 on a diet of straw and maize gluten. Postmortem examination found an increased volume of cerebrospinal fluid and bilateral symmetrical fluorescence of the cerebral grey matter under ultra-violet light. Cerebrocortical necrosis (CCN) was suspected and confirmed on histopathology. The rumen content in this case was liquid and lacked fibre suggesting that the CCN was diet related and a result of thiamine deficiency.

Two, ten-month-old Aberdeen Angus cattle developed neurological signs in August while the group of 34 were grazing a silage aftermath. They failed to respond to treatment and died after a few days. There were no significant findings on postmortem examination, however histopathology revealed marked non-suppurative meningoencephalitis with gliosis, perivascular cuffing and neuronophagia. This suggested the possibility of louping ill, but PCR testing of brain tissue was negative. A positive *Anaplasma phagocytophilum* PCR result confirmed exposure

to tick borne fever but as the timing of this was unknown the significance was not clear. There was no evidence of lead poisoning. Further investigation detected the presence of bovine astrovirus in both cases. Bovine astrovirus is a fairly recently reported cause of sporadic cases of encephalitis in cattle.<sup>1</sup> The epidemiology is not well-defined making recommendations for prevention and control challenging.

### **SMALL RUMINANTS**

#### **Nutritional and metabolic disorders**

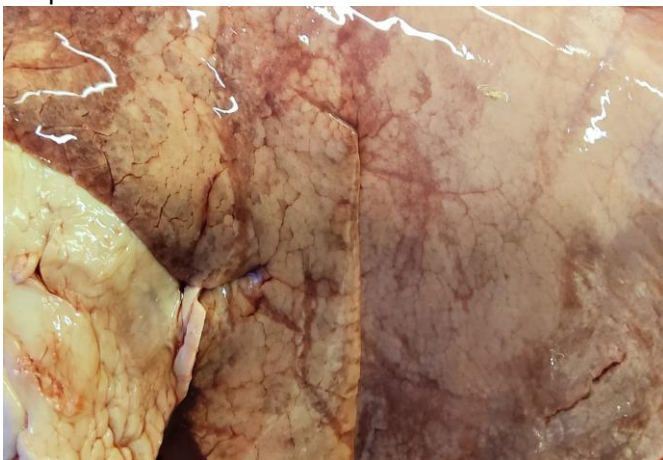
Two, seven-month-old Cheviot cross wether lambs from a group of 100 were examined postmortem following the death of 12 animals with a history of diarrhoea and ill thrift. The lambs had access to stubble fields, grass, bruised barley and dark grains. Large quantities of cereal grains were found in the rumens with a pH of 3.68 in lamb 1 allowing acidosis to be recorded as the cause of death. The rumen pH in lamb 2 was 5.05 and it had severe, extensive ulcerative and transmural rumenitis (Fig 3) with concurrent abomasitis. Histopathology confirmed necrotising and thrombosing rumenitis with widespread fungal hyphae, indicative of secondary mycotic infection following a prior episode of acidosis. This was consistent with the fact that the lambs had been fed the same ration since purchase two months before.



**Figure 3 – Severe fungal rumenitis in a lamb secondary to rumen acidosis**

### Toxic conditions

Seven, eight-month-old Texel cross lambs from a group of 300 were found dead over a 48-hour period. They had been grazing a kale/turnip mix with access to a grass run back for three weeks and growth rates were lower than expected. An anthelmintic and a mineral drench had been given nine days before. Three carcasses were submitted and found to be in moderate to good body condition. Postmortem examination findings were consistent in all cases with light brown discolouration of the conjunctiva and body tissues (Fig 4). The kidneys had a blackish appearance and the bladders contained red-brown urine. Nitrate and/or S-methyl cysteine sulphoxide toxicity was suspected, and chronic copper toxicity was ruled out following liver and kidney analysis. The brown discolouration of the tissues is due to the formation of methaemoglobin which is unable to transport oxygen. Methaemoglobin is more likely to be present in significant quantities following conversion of nitrates to nitrites in the rumen rather than as a consequence of haemolytic anaemia due to S-methyl cysteine sulphoxide. A urine dipstick test carried out on aqueous humour proved negative for nitrite but was not considered to be a sufficiently robust screen to exclude it. The group were removed from the crop and no further deaths occurred.



**Figure 4 – Brown discolouration of the lungs, in contrast to the whiter pericardial fat, in a lamb with suspected nitrate toxicity**

Rhododendron toxicity was confirmed following postmortem examination of three Mule ewe lambs which identified green waxy leaves in the rumens. Four animals from the group of 400 had been found dead and a further four were reported to be very dull. They had been purchased in October and had shown no signs of ill health when they were moved to a fresh field three days before. The diagnosis was unexpected as there was no snow on the ground and good grass supply in the new field. However there had been heavy rain and the lambs had found shelter in a wooded area where rhododendron grew.

### Generalised and systemic conditions

A postmortem examination was carried out on a Scottish blackface ewe hogg that died following an episode of mucoid diarrhoea. The carcass was in good body condition with uniformly purple lungs and blotchy kidneys. The abomasum and intestines were distended with liquid contents and haemorrhages were evident on the mucosae. There were no significant findings on bacteriology. Histopathology of the brain found changes consistent with polyarteritis nodosa which is commonly associated with persistent viral infections. Examination of further tissues revealed widespread lymphocytic vasculitis affecting multiple organs, including the brain, kidney, spleen, heart, and gastrointestinal tract. These lesions were consistent with systemic necrotising vasculitis which has been described with ovine herpesvirus-2 (OHV-2).<sup>2</sup> PCR testing confirmed OHV-2 infection, and subsequent in-situ hybridisation was positive, confirming that OvHV-2 was associated with the vascular lesions.

### PIGS

#### Reproductive tract conditions

Five foetuses and three placentas were submitted from the second sow to farrow around a week early. Other sows in the group had been found to be empty. Postmortem examination revealed limited autolysis, unexpanded lungs, meconium ingestion,

and congested placentae with areas of focal thickening, and possible ulceration. Despite evidence of placentitis, there were no significant findings on bacterial culture. Pooled PCR testing of foetal lungs detected PRRS virus confirming this as the cause of abortion.

### BIRDS

#### Reproductive tract disorders

A layer unit reported a sudden increase in mortality with 30 birds from a flock of 350 dying over the course of ten days. The birds were bought in at 16 weeks-of-age and had been on the premises for eight to ten weeks. Affected birds were described as listless prior to death and a drop in egg production was noted. Three carcasses were examined and found to be thin. Egg peritonitis was diagnosed as the cause of death in all cases with additional pericarditis and air sacculitis in one bird. Pure growths of *Escherichia coli* were isolated from multiple tissues and considered significant.

Risk factors for egg peritonitis include over feeding and stress due to overcrowding or environmental factors for example.

### MISCELLANEOUS

#### Alimentary tract conditions

The carcass of a four-month-old red deer was submitted after it became the sixth calf to be found dead from a group of 250. The calves had been weaned three weeks before and were treated with ivermectin at that time. The group was at grass and cobs were fed daily via a snacker. The carcass was in average body condition and appeared dehydrated and faecal stained. A 30 cm section of the small intestine was dark brown with haemorrhagic contents and the mesenteric lymph nodes were enlarged. *Yersinia pseudotuberculosis* was isolated from the intestine and considered to be the cause of death. *Yersinia* spp bacteria are carried in the gastrointestinal tract of healthy livestock and wildlife and therefore present in the environment.

Yersiniosis is an important cause of death in deer calves with stressors such as weaning, diet change or cold/wet weather known to trigger outbreaks of clinical disease.

#### Parasitic diseases

A five-month-old cria was found collapsed an hour after it was observed eating hay and died overnight. It was from a herd of 30 alpacas that were housed at night and had access to hay and two camelid specific supplementary feeds. A second cria had died recently and one other was ill. The carcass weighed 10.1kg and was emaciated with poor bone strength. It was reported to have weighed 6kg at birth. A single *Dictyocaulus* sp lungworm was found and 3500 *Trichostrongyle* sp were recovered from C3. There was no evidence of diarrhoea however a further 17,200 mixed *Trichostrongyle*/*Nematodirus* spp worms were recovered from the small intestine. The coccidial oocyst count was 442,040 oocysts per gram (opg) of which 1,440 were the highly pathogenic *Eimeria macuensis*. Liver copper and selenium results were both considered low with results of 196.4 umol/kg dry matter (DM) and 0.415 mg/kg DM respectively. It was advised that herd body condition was assessed and samples collected for further parasitology and trace element screening.

#### References:

- 1 Comeau D, Spinato MT, Ojkic D et al Bovine astrovirus and its role in lymphocytic encephalitis in cattle in Ontario, Canada 1988–2019. *J Vet Diag Invest*; 2024;36(3):447–56
- 2 Pesavento PA, Dange RB, Carmen Ferreras M et al Systemic necrotising vasculitis in sheep in association with ovine herpesvirus 2. *Vet Path* (2019); 56(1):87–92