

OVERVIEW

- Lymphoma and suspected paraneoplastic syndrome in a dairy cow
- Outbreak of cerebrocortical necrosis in bull beef calves following alteration of the ration
- Ovine keratoconjunctivitis due to *Mycoplasma conjunctivae*

GENERAL INTRODUCTION

February was a dull month with only 76 per cent of sunshine when compared to the 1991 to 2020 average. Rainfall figures equalled 96 per cent of average and it was the third warmest February in a 140-year series with the mean temperature 2°C above the thirty-year average.

DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in May 2022. Given similar climatic and production conditions, they could also be important this year.

Lead poisoning in cattle

Diagnoses of lead poisoning peak in May and June following turn-out to grass. Youngstock are often affected, and clinical signs can include sudden death, blindness, ataxia, abdominal pain, teeth grinding, salivation or convulsions. Blood lead levels greater than 1.2 µmol/l or kidney lead levels over 2 mg/kg fresh tissue confirm the diagnosis. Cases of lead poisoning are reported to Food Standards Scotland in order to protect the food chain. It is prudent to inspect fields (particularly for discarded car batteries) before cattle are turned out.

Lamb dysentery

Clostridial enterotoxaemia type B affects lambs up to three weeks of age with sudden deaths and/or haemorrhagic diarrhoea the most common presenting signs. Postmortem examination findings are often distinctive with inflammation and intra-mural emphysema of a section of the small intestine. Small intestinal contents may test positive for beta and epsilon toxins, but these are labile and not always detectable. Histopathology will provide a conclusive diagnosis.

CATTLE

Generalised and systemic conditions

A five-year-old Norwegian red cross cow with a month-long history of skin lesions was euthanased after developing acute abdominal pain. It had been milking well until this point. The skin lesions were round, raised and well-defined measuring up to 6cm in diameter (Fig 1a). They were non-pruritic and present on all areas of the body apart from the udder. Postmortem examination detected marked enlargement of the superficial lymph nodes. There were adhesions between the viscera of the caudal abdomen, pelvis and body wall and the left kidney was surrounded by soft tissue masses (Fig 1b). Histopathology confirmed that these consisted of lymphoid tissue that had been infiltrated by a high grade round cell tumour, most likely lymphoma. The skin lesions appeared to be inflammatory rather than neoplastic and the cause was unclear. A paraneoplastic syndrome was considered to be a possible explanation. The diagnosis was reported to the Animal and Plant Health Agency (APHA) under the Enzootic Bovine Leukosis (EBL) (Scotland) Regulations 2000. A diagnosis of EBL was negated following PCR testing of lymphoid tissue.



Figure 1a – Non-neoplastic skin lesions in a dairy cow with lymphoma



Figure 1b - Lymphoid tissue surrounding the left kidney (lower left) in a dairy cow with lymphoma

Alimentary tract disorders

A three-week-old Holstein calf was submitted for investigation of diarrhoea that had commenced at ten days of age with melaenic faeces observed prior to death. It was fed a 50:50 mix of cows' milk and milk replacer from a bucket and teat. Milk was found within the rumen and there was petechiation of the abomasal mucosa. A 15 cm long blood clot filled the proximal duodenum, and the large intestinal contents were liquid with blood clot admixed through the faeces. There were multiple raised spots suspected to be abscesses along a 6 cm length of the proximal colon. Scant cryptosporidial oocysts were detected, but screening for BVDV, rotavirus, coronavirus, *Salmonella* and *Yersinia* spp proved negative. Histopathology confirmed a severe, subacute rumenitis secondary to rumen drinking, and widespread mucosal collapse and erosion of the duodenum was considered to be the source of the blood clot. There was diffuse loss of large intestinal mucosal glands, for which previous coronavirus infection or coccidiosis were possible explanations. The lesions in the colon were due to depletion of the submucosal lymphoid deposits causing the mucosa to collapse in and become inflamed. SRUC VS commented that the changes in the intestine may have been a result of dysbiosis associated with the severe rumenitis. The possibility of a historic enteric insult couldn't be excluded. The lesions found at postmortem examination were unusual for a case of rumen drinking.

Reproductive tract conditions

A shorthorn cross stirk was found dead one week after six yearling animals were dehorned and surgically castrated. It was reported to have been well the previous day. Postmortem examination found generalized pallor and 8 litres of clotted blood plus 10 litres of serosanguinous fluid within the abdomen. The right retroperitoneal space was distended by two large blood clots which had stretched and torn the peritoneum allowing blood to enter the abdomen. The surgical wounds were clean and dry, and there was no visible bacteriological or histological evidence of septicaemia, toxæmia or peritonitis. Haemorrhage is a rare complication following surgical castration, however the risk is greater in older animals.

Nervous system disorders

Around 20 per cent of a group of 60, ten-month-old bull-beef calves required treatment for a stiff gait which progressed rapidly to recumbency with opisthotonus, extended legs and lateral nystagmus. Postmortem examination of one animal was not diagnostic. Further testing excluded lead poisoning, bacterial meningitis and enterotoxaemia. The fixed brain fluoresced under ultraviolet light and neuropathology revealed severe, diffuse, laminar polioencephalomalacia with marked vacuolation of the lateral thalamic nucleus consistent with a diagnosis of cerebrocortical necrosis (CCN). There was no history of excessive sulphur intake. A power cut two weeks before problems began prevented routine urea/enzyme treatment of the barley included in the creep feed. Untreated barley was substituted, and it was noted that the heifer group which did not have access to this were unaffected. It was postulated that this change to the ration had triggered multiplication of thiaminase producing bacteria in the rumen. The farmer reported that animals treated with Vitamin B1 in the early stages responded well however two animals died and one calf remained blind.

Skin diseases

A two-year-old calved dairy heifer developed multiple, raised, nodular skin lesions on its neck and dorsum over a two-week period. There was no evidence of systemic illness and ringworm was ruled out on microscopy and dermatophyte culture. Fixed tissue was submitted from one of the lesions and a diagnosis of epitheliotropic lymphoma was made on histopathology. APHA were informed.

SMALL RUMINANTS

Nutritional and metabolic disorders

A greyface ewe was submitted following the death of eight ewes from a group of 40 due to start lambing in one week. The group were at grass with access to high energy mineral licks and blocks. Concentrate feed had been introduced in the previous two weeks. Some of the affected ewes had been treated for suspected twin lamb disease while others, including the ewe for postmortem examination, had been found dead. The carcase weighed 83 kg and contained large deposits of internal fat (Fig 2). The uterus containing triplet foetuses filled the whole of the ventral abdomen and accounted for 20 per cent of the ewe's bodyweight. Findings of very poor rumen fill and an empty colon and rectum were inconsistent with the history of sudden death. The liver was pale, but tissue failed to float in water indicating that the degree of hepatic lipidosis was not severe. Pregnancy toxæmia was suspected and the aqueous humour BOHB result of 13 mmol/l (reference range <2.5 mmol/l) confirmed the diagnosis. Over conditioning of the ewes was considered to be the underlying issue in this case. Subclinical ruminal acidosis relating to the introduction of concentrates may also have played a role by reducing dry matter intakes.



Figure 2 – Excessive peri-renal fat in a ewe with pregnancy toxæmia

Generalised and systemic conditions

A housed two-week-old Suffolk cross lamb from a flock of 25 ewes and 35 lambs was found dead. The owner was concerned about clostridial disease as the dams had not received their pre-lambing booster vaccination. Postmortem examination detected fine strands of fibrin in the pericardial sac and swelling of the brain causing

flattening of the cerebral gyri. The epsilon toxin of *Clostridium perfringens* was detected in small intestinal content. Histopathology revealed lesions in the white matter of the brain consistent with focal symmetrical encephalomalacia confirming a diagnosis of *Clostridium perfringens* type D enterotoxaemia (pulpy kidney).

Alimentary tract disorders

Sand impaction of the distal jejunum was diagnosed as the cause of death in an eight-year-old Lleyn ewe in good body condition and pregnant with quadruplets. The resulting accumulation of ingesta in the small intestines and abomasum was thought to have compromised respiration. There was no visible mucosal damage at the site of impaction, however pure growths of *Escherichia coli* from the lung, liver and brain suggested terminal bacteraemia secondary to microscopic abrasion.

Nervous system disorders

Two ocular swabs were submitted from a flock experiencing an outbreak of “pink eye” for the second consecutive year. *Mycoplasma conjunctivae* was detected by PCR and is the most common cause of ovine keratoconjunctivitis. Mixing of groups containing carrier animals plus the failure of antibiotic treatment to eliminate the bacteria from the eye make this a challenging condition to control (Fig 3). The ewes were at grass and using feeders which is a risk factor for spread of infection due to increased head-to-head contact.



Figure 3 – Typical clinical signs of ovine keratoconjunctivitis due to *Mycoplasma conjunctivae*

PIGS

Generalised and systemic conditions

Three finishing pigs were shot and submitted to investigate joint problems within the group. Two of the three had evidence of septic arthritis affecting hock or elbow joints (Fig 4) and they all had lesions consistent with bacteraemia including pericarditis, peritonitis, pleuritis and pneumonia. *Pasteurella multocida* was cultured from the lungs of all three and the heart of one. *Trueperella pyogenes* was isolated from the purulent joints and suspected to be secondary to infection with *Mycoplasma hyosynoviae* which was detected on DGGE/PCR. *M hyosynoviae* can be carried in the tonsils of healthy pigs and usually affects animals with bodyweights between 35 and 120 kg. The submitted pigs weighed between 70 and 80 kg.

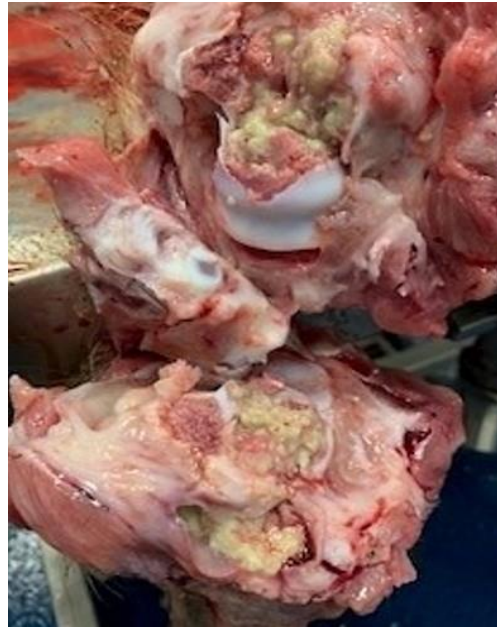


Figure 4 - Septic arthritis in a finishing pig due to *Mycoplasma hyosynoviae* and *Trueperella pyogenes*