

OVERVIEW

- **Cholelithiasis in a beef cow**
- **Multiple lamb deaths as a result of closantel toxicity**
- ***Streptococcus caledonicus* as a cause of septicaemia in a lamb**

GENERAL INTRODUCTION

Monthly mean temperatures were 0.6 °C above average due to the warm start to September. Rainfall was well above average in parts of the east with 109 per cent of average across Scotland as a whole. Sunshine was above average in the south-west, and equal to the long-term average overall.

DISEASE ALERTS

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

- **Respiratory disease in housed calves**
Employing PCR testing in the investigation of pneumonia outbreaks frequently confirms concurrent infection with a range of viral and bacterial pathogens. This highlights the multifactorial aetiology of bovine pneumonia reinforcing the importance of managing the complex risk factors that increase susceptibility to pneumonia including stress physiology, nutrition, passive immunity, ventilation and building design in disease prevention.
- **Pyelonephritis in housed beef cattle**
Corynebacterium renale is a common inhabitant of the lower reproductive tract and is an opportunistic pathogen that takes advantage of tissue damage and/or immunosuppression with ascending infection occurring most frequently in the periparturient period. Cases of pyelonephritis are usually sporadic, but it is worth checking that access to water is adequate as poor intakes in housed cattle is a possible predisposing factor.

CATTLE

Generalised and systemic conditions

Idiopathic necrotic enteritis (INE) was suspected to be the reason for multiple pathologies seen in a five-month-old suckled calf that had been ill thriven from three weeks-of-age. It was the only calf affected from a group of 50. The farmer noted multiple circular areas of ulceration over the muzzle and perineal region and postmortem examination confirmed ulceration of the tongue, hard palate, pylorus and ileocaecal junction. Discrete 2 mm raised lesions were found along the length of the small intestinal mucosa and were also detected in the colon. Histopathology showed these to be areas of focal necrosis affecting the full thickness of the intestinal wall and frequently associated with submucosal lymphoid deposits. Areas of lung described as consolidated were revealed to resemble areas of infarction rather than bronchopneumonia. Examination of bone marrow revealed a reduction in erythroid and myeloid cells with the former providing an explanation for the carcass pallor observed. *Pasteurella multocida* was isolated from the lung and liver suggesting a terminal bacteraemia. Screening for BVD virus and ovine herpes virus-2 proved negative. The skin lesions were considered secondary to severe immunosuppression as a consequence of INE. This calf was atypical in that diagnoses of INE are more common in two to three-month-old animals following a shorter disease course.

Alimentary tract disorders

An eight-year-old shorthorn cross cow became inappetent with crusting of the nose and periorbital skin typical of photosensitisation. Five days later there was evidence of haemorrhagic diarrhoea followed by gut stasis, salivation and polydipsia. The cow remained bright but died 48 hours later. Postmortem examination confirmed dehydration and mild jaundice. Multiple red-brown, angular gallstones up to 2 cm in length were observed in the bile ducts (Fig 1) and deemed to be responsible for the clinical signs. The gallbladder was markedly distended with thick bile, but large stones were absent and the liver parenchyma was unremarkable. Histopathology confirmed photosensitisation but the cause of the gall stones remained unknown. Cholelithiasis is an uncommon diagnosis in cattle and this was considered to be a one off case with no implications for the rest of the herd.



Figure 1 – Choleliths recovered from the bile ducts of a suckler cow

Reproductive tract conditions

A six-month-old Charolais cross calf from a group of 20 cows with calves at foot appeared dull and was treated with antibiotics before being found dead the following morning. It was a twin to a bull and suspected to be a freemartin. This was confirmed on postmortem examination as two gonads with well-developed epididymides were present in the inguinal canal. Paired vesicular glands were observed adjacent to a narrow tube running from the bladder to an underdeveloped vulva with a tuft of long hairs at the ventral commissure (Fig 2). The congenital malformation of the urogenital tract was thought to have predisposed to ascending infection via the short and apparently combined urethra/vagina. The resulting severe cystitis had culminated in uroabdomen due to leakage of urine across the necrotic bladder wall.



Figure 2 – Congenital malformation of the urogenital tract in a freemartin calf

SMALL RUMINANTS

Nutritional and metabolic disorders

Three, three-month-old Lleyn lambs at grass were found to be unsteady and the carcase of a fourth was submitted for postmortem examination. It was very thin with little internal body fat. The strongyle egg count was 1200 eggs per gram (epg) and seven hundred adult *Teladorsagia* sp worms were recovered from the abomasum. The group had been treated with a benzimidazole drench one week before and no worms were recovered from the small intestine strongly suggesting that the *Teladorsagia* sp were benzimidazole resistant. The cause of death was not clear however histopathology detected multifocal areas of degeneration and necrosis within the myocardium. Together with a low liver selenium result (0.43 mg/kg dry matter (DM); reference range 0.9 – 3.5 mg/kg DM) this was consistent with a diagnosis of nutritional myopathy. Hyposelanososis was a common finding in lambs submitted for postmortem examination during September. Most were submitted in order to investigate ill thrift and had concurrent high nematode burdens. Cobalt deficiency was also evident in some.

Toxic conditions

Multiple deaths were reported in a group of 40 homebred ewe hogs suckling 50 two-month-old, April-born lambs. The affected sheep appeared blind and at least five hogs and 32 lambs had died. On-farm postmortem examinations failed to identify the cause and three blind lambs were submitted for further investigation. Neuropathology found spongy changes in the optic tract and vacuolation of the cerebellar white matter core, optic nerve and retina. The changes suggested the possibility of a primary toxicity such as exposure to phenolic compounds or halogenated salicylanides. The history indicated that the ewe hogs, but not the lambs, had been drenched with mebendazole and closantel. However, toxicology detected closantel in the liver and/or small intestinal contents of these three lambs plus a further three examined on-farm. It was therefore hypothesized that a ewe dose of closantel had been administered to the lambs which weighed between 9.8 and 14.1 kg. This would be a sufficient overdose to explain the clinical signs.

Generalised and systemic conditions

The third five-month-old Texel cross lamb to be found dead in a group of 200 was submitted for investigation of both the deaths and generally poor growth rates. Other lambs were reported to be weak and lying down a lot. Postmortem examination detected splenomegaly, a fibrinous pleurisy/pericarditis and endocarditis of both atrio-ventricular valves. Septic arthritis affected the left carpus and both stifles. *Streptococcus caledonicus* was

cultured in pure growth from the lung, liver and joints and in mixed growth from the heart. Histopathology detected purulent emboli in the kidneys and supported a diagnosis of bacterial septicaemia. The bacteriology results are of interest as this bacterium was only recognised in 2020 when it was suggested that it may be associated with sporadic disease in sheep.¹ The findings did not explain the poor performance of the group as the worm burden was low and trace element status appeared adequate. Submission of further samples was advised.

Eight ewes from a flock of 300 presented with depression and teeth grinding progressing to recumbency. Two sheep died and were submitted for postmortem examination with findings suggestive of bacterial meningitis in one ewe. *Mannheimia haemolytica* was isolated from the brain and the diagnosis was confirmed on histopathology. The second ewe had enlarged retropharyngeal lymph nodes, pulmonary congestion, splenomegaly and meningeal hyperaemia. *Histophilus somni* was isolated from the brain and lung and histopathology revealed acute inflammation with a predisposition for muscle consistent with *H. somni* septicaemia. Evidence of thrombotic meningoencephalitis (TME) was not seen.

A three-month-old lamb on a second farm was found dead and an on-farm postmortem examination found evidence of ascites and pleural effusion. Histopathology identified a chronic active suppurative myocarditis and *H. somni* infection was considered the most likely cause. PCR testing of the myocardium proved negative reflecting the chronic nature of the pathology. *H. somni* is more widely known as a bovine pathogen but a similar range of pathologies including bronchopneumonia, myocarditis, TME, septicaemia and polyarthritis have been reported in sheep.²

Skin diseases

In late June a hobby flock noted nibbling and patches of wool loss affecting five of 14 Ryeland lambs. The group were weaned six days later, and wool and blood samples collected at this time showed no evidence of ectoparasites or seroconversion to *Psoroptes ovis*. The ewes remained clinically normal, but all 14 lambs became increasingly pruritic. The owner treated them topically with chlorhexidine and shampoos and administered antibiotics and oral chlorphenamine to no effect. In late August a severely affected six-month-old lamb was euthanased on welfare grounds and submitted for postmortem examination. Wool was wrapped around its incisors and extensive wool loss with skin thickening and scabbing was found over the scrotum, perineum and flanks. *Psoroptes ovis* mites were detected and the sheep scab ELISA returned a positive antibody titre of 108 per cent (positive cut off > 50 per cent). It was

assumed that the previous blood samples had tested negative as insufficient time had passed following infection to allow seroconversion to occur.

Renal diseases

The second Texel gimmer to die after a short period of illness was submitted for postmortem examination. It had been treated with antibiotics twice in the previous four days but continued to deteriorate. A uraemic smell was noted when the carcass was opened and there was evidence of peritonitis which was most severe in the caudal abdomen and pelvis. Multiple 2 to 4 mm areas of necrosis were found within the peri-renal fat and renal cortices with dark red cloudy fluid present in the renal pelvises. An entire CIDR (controlled internal drug release) device was found within the bladder the wall of which was grey and necrotic (Fig 3). No urine was present, and it was considered that it had leaked through the devitalised wall. The urethra appeared inflamed, and the aqueous humour urea result of 95.7 mmol/l (serum reference range 4 – 8 mmol/l) confirmed renal failure. CIDRs had been inserted into 20 gimmers and were due to be removed that day. It is important that farmers are made aware of and follow the insertion guidelines on the data sheet.



Figure 3 – CIDR within the bladder of a ewe

BIRDS

Poultry

A group of 140, day-old turkeys were purchased and housed in two groups within a ring feeder. Two weeks after arriving the heat lamps were raised and the daily mortality rate immediately increased from 2 to 10 per cent. Eight birds were examined postmortem and found to be in good body condition. However, in all cases the gizzards were filled with wood shavings that were used

as bedding. No evidence of infectious disease was detected, and it was postulated that birds had starved after failing to eat following the alteration in environmental conditions.

MISCELLANEOUS

Postmortem examination of a hare (*Lepus timidus*) found dead on a moor identified lung congestion and haemorrhages on the spleen. Histopathology revealed zonal and single cell hepatic necrosis consistent with calicivirus infection. The pan-calicivirus PCR was positive, and sequence analysis confirmed a diagnosis of rabbit haemorrhagic disease virus type 2 (RHDV-2).

RHDV-2 was first reported in Scottish hares in 2019. The condition was identified in Ireland in the same year raising conservation concerns for the endemic Irish hare (*Lepus timidus hibernicus*).³

A five-year-old captive red deer was submitted for investigation of diffuse nodular skin swellings, weight loss and peripheral oedema. The nodules were associated with a marked peripheral lymphadenopathy and further examination revealed a large mass dorsal to the udder. This infiltrated through the body wall and was contiguous with a retroperitoneal mass that extended deep into the dorsal lumbar musculature. Multiple variably sized pale circular lesions were present in both renal cortices. Histopathology described a disseminated poorly differentiated round cell tumour, possibly of plasma cell origin, with a high mitotic rate which is likely to be a sporadic case

References:

- 1 Foster G, Kirchner M, Muchowski J *et al* *Streptococcus caledonicus* sp. nov., isolated from sheep. *Int J Syst Evol Microbiol* 2020; 70(4): 2611-2615
- 2 Headley SA, Pereira AHT, Balbo LC *et al* *Histophilus somni* associated syndromes in sheep from Southern Brazil. *Braz J Microbiol* 2018; 49(3): 591-600
- 3 Byrne AW, Marnell F, Barrett D *et al* Rabbit haemorrhagic disease virus 2 (RHDV2; GI.2) in Ireland focusing on wild Irish hares (*Lepus timidus hibernicus*): An overview of the first outbreaks and contextual review. *Pathogens* 2022; 24;11(3): 288