SRUC Veterinary Services Monthly Report for September 2025

OVERVIEW

- **High mortality due to doxycycline toxicity in dairy calves**
- **Clostridial enterotoxaemia type D (pulpy kidney) in an alpaca**
- **Copper deficiency and concurrent haemonchosis in a red deer hind**

DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in December 2024. Given similar climatic and production conditions, they could also be important this year.

Black Disease
Most animals with black disease are found dead however chemosis (conjunctival swelling) has been reported in cattle that are seen alive. Liver lesions can be subtle particularly if the tissue is autolysed, but typically consist of a pale, firm roughly circular lesion surrounded by a haemorrhagic rim. Concurrent *Fasciola hepatica* infection is not always present. Histopathology or detection of *Clostridium novyi* by anaerobic culture or fluorescent antibody testing can be used to confirm the diagnosis.

Brassica toxicity
Nitrate toxicity, photosensitisation and haemolytic anaemia are all issues that can be seen in sheep grazing brassicas. A slow introduction to the crop will help to reduce the risk and the animals should have access to an alternative forage source. Losses can be high therefore sudden deaths should be investigated promptly to allow action to be taken and screen for other differentials such as pasteurellosis or clostridial enterotoxaemia..

GENERAL INTRODUCTION

Mean temperature (11.3˚C), rainfall and sunshine figures for September were all close to their respective 1991-2020 averages. There were regional differences with the east having a sunny month; above average rainfall in Dumfries and Galloway; and dry conditions in parts of the north-east.

CATTLE

Nutritional and metabolic disorders
A herd where half of 80 autumn calving cows had calved complained of dull, slow calves and an increased incidence of neonatal diarrhoea and pneumonia. The cows were housed three weeks prior to calving and fed a hay/undersown barley straw diet. The carcase of a calf that died one hour after an assisted calving was submitted for postmortem examination with no evidence of infectious disease detected. Histopathology confirmed meconium aspiration consistent with foetal distress, and thyroid changes indicative of historical iodine deficiency which was considered unlikely to have contributed to perinatal death. Concurrent metabolic profiling of six cows demonstrated low urea and elevated NEFA levels, consistent with negative energy balance and a deficiency of rumen degradable protein and/or poor access to the ration. Inadequate dietary protein and energy intakes can lead to poor colostrum quality/quantity and reduced calf viability, predisposing to neonatal disease.

Toxic conditions
A large dairy herd reported the death of 30 to 40 pre-weaned Holstein calves over a seven day period. Coughing had been noted a week before deaths commenced, and doxycycline had been added to the milk. Some calves died acutely within 20 minutes of ingesting milk while others were ill for 24 to 48 hours prior to death. Postmortem examination of four calves found evidence of lung consolidation in all cases and a

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pericardial effusion in one. Five further carcases were submitted two days later with lung consolidation in three and pale, firm lesions within the myocardium of all five (Figure 1). Histopathology described multifocal mono- or polyphasic myocardial injury characterised by necrosis of myofibres and mineralisation. Sections of tongue showed evidence of a more chronic myopathy. The findings were consistent with a toxic aetiology and similar to previous reports of doxycycline toxicity which have suggested that the muscle of the tongue is affected first.[1] Further history established that doxycycline had been included at two to three times the recommended rate, and mortalities slowed after it was removed. Bacteriology and PCR testing of lung showed that *Pasteurella multocida, Mannheimia haemolytica and Mycoplasma bovis* were contributing to the pneumonia.

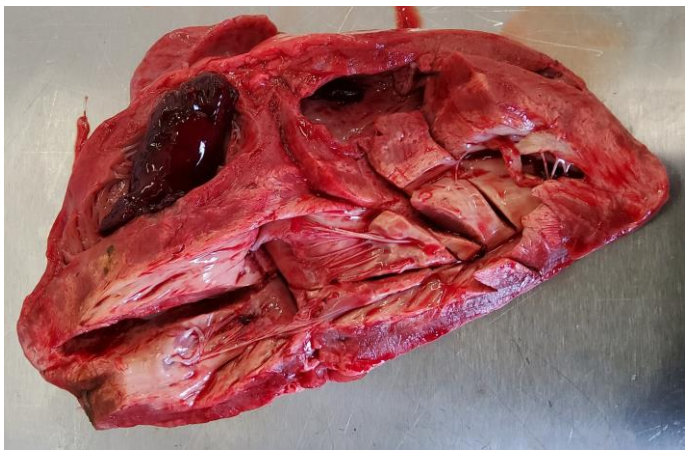

Figure 1 – Pale lesions within the myocardium in a case of doxycycline toxicity

Generalised and systemic conditions

A well-grown, four-month-old Limousin cross suckler calf at grass presented with a non-weight bearing lameness of the left foreleg. It was treated with meloxicam but deteriorated and died overnight. External examination identified a large area of subcutaneous crepitus over the left shoulder. Postmortem examination found that the underlying muscle had a dry, black appearance with multiple small gas bubbles typical of blackleg. Similar changes were noted in the diaphragm and there was an associated pericarditis typical of that seen with cardiac blackleg (Figure 2). Fluorescent antibody testing of affected muscle from the leg was positive for *Clostridum chauvoei* confirming the diagnosis. It is not unusual for lameness to be observed prior to death in cases of blackleg; and relatively common for lesions to be detected in two or more sites on postmortem examination.

Figure 2 – Pericarditis in a case of cardiac blackleg

Alimentary tract disorders

Two dairy herds each submitted a neonatal calf for postmortem examination after noting a sudden increase in mortality rate in this age group. Diarrhoea was seen in some cases, but antibiotic treatment was ineffective. Testing confirmed *Escherichia coli* K99 to be the cause of death in both cases. One herd had a robust colostrum policy, and the calf had received 4 litres of good quality dam colostrum via stomach tube within two hours of birth. As a large number of cows were due to calve it was suggested that, in addition to improving hygiene in calving pens and calf accommodation, cows were vaccinated at drying off to boost colostral antibodies against *E. coli* adhesins F5 (K99).

Musculo-Skeletal conditions
A joint tap was carried out on a ten-day-old Holstein calf after two animals from a group of 30 became lame. There was no evidence of navel ill and septic arthritis was not usually an issue in the herd. Reduced milk intakes had been noted and concern over possible *Mycoplasma bovis* infection had prompted investigation. *Streptococcus ruminantium* was recovered in a scant but pure growth and has been reported as a cause of septic arthritis in cattle.[2]

Circulatory system disorders
The carcases of two homebred Lincoln red cross heifers from a group of 28 were submitted to investigate the cause of death. The group had been rotating around several fields including an area of rough hill and high tick burdens had been observed. Heifer one presented acutely ill and appeared pale but died rapidly despite treatment. Postmortem examination revealed mild interlobular pulmonary oedema, splenomegaly, and an incidental renal cyst. PCR testing confirmed babesiosis due to *Babesia divergens*. Heifer two had received antibiotics for suspected pneumonia a few days prior to being found dead. Postmortem examination detected marked pulmonary hyperinflation with interlobular emphysema, bulla formation, multifocal consolidation, and purulent foci. Histopathology revealed subacute interstitial pneumonia superimposed on chronic bacterial bronchopneumonia to be the cause of death. Screening for *Babesia* spp proved negative in this case. Homebred animals are less likely to succumb to babesiosis. However, in this case it was assumed that heifer one had been naïve prior to grazing the rough hill.

SMALL RUMINANTS

Generalised and systemic conditions
The carcase of a five-month-old Texel cross lamb was submitted for examination after four lambs from a group of 68 died over a 24-hour period. Animals seen alive were very dull and treatment with antibiotics and NSAIDs was unsuccessful. The group had been weaned a month previously and moved to better grazing ten days before losses began. They had received a course of clostridial vaccination. Haemorrhages were found within the tissues of the neck, there was blood splashing on the parietal pleura with further haemorrhages visible on the visceral pleura and within the lung parenchyma. Pin-point white spots were noted on the liver (Figure 3), the abomasal and caecal mucosae were inflamed, and faeces were diarrhoeic. A pure growth of *Bibersteinia trehalosi* was isolated from the liver consistent with a diagnosis of systemic pasteurellosis. The change of field with improved nutrition was the likely catalyst for this outbreak.

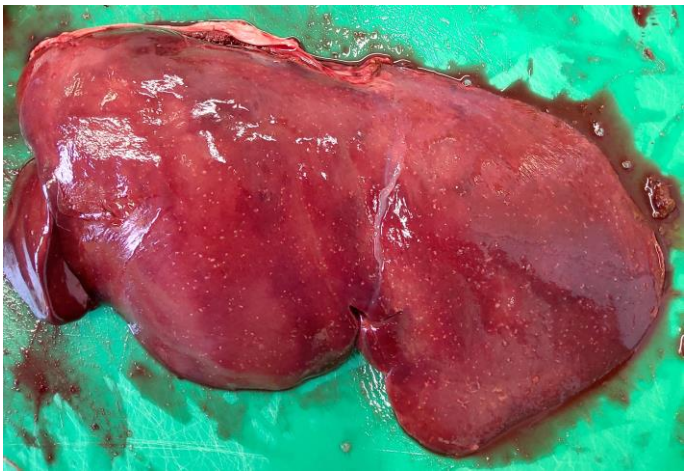

Figure 3 – Liver lesions in a case of systemic pasteurellosis due to *Bibersteinia trehalosi*

Nervous system disorders
Infectious keratoconjunctivitis (IKC) was reported in a group of six-month-old beltex lambs with recurrent, persistent eye infections. Affected animals had a clear ocular discharge, uveitis and conjunctivitis which would temporarily respond to treatment with tetracyclines but recur shortly afterwards. Ocular swabs were submitted and tested PCR positive for *Mycoplasma conjunctivae* which is the most commonly diagnosed cause of IKC in sheep. The recurrent clinical signs can be explained by the fact that treatment with

tetracyclines will not eliminate *M conjunctivae* from the eye.[3]

Fixed brains were received following postmortem examinations carried out on three separate farms. In all cases there was a history of neurological signs including ataxia, weakness and recumbency. Louping ill serology carried out on blood samples from all three flocks proved positive with a predominance of IgM indicating recent infection in two. Neuropathology findings supported the diagnosis and included non-suppurative meningoencephalitis with perivascular cuffing, foci of gliosis and scattered neuronophagia.

Circulatory system disorders

A three-year-old Wensleydale cross ewe was found dead and submitted for postmortem examination. It was the fourth death in a few days from a group of 200 ewes with lambs at foot following a move to a fresh field. Postmortem examination found oedematous lungs and a bilateral pleural effusion but no evidence of lung consolidation or a pericardial effusion. A small volume of ascitic fluid was present and there was marked hepatospenomegaly. The findings were suggestive of cardiac failure, but no myocardial lesions were observed. However, histopathology detected a severe polyphasic cardiomyopathy with chronic inflammation and extensive replacement of the myocardium with fibroblasts. More recent areas of necrosis indicated that this was an ongoing process, but the underlying cause was not clear. A liver selenium result below the reference range (0.51 mg/kg dry matter (DM); reference range 0.9 – 3.5 mg/kg DM) suggested that the ewe may have been less able to cope with the ongoing damage, but this was unlikely to be the primary cause. Investigation of further deaths was advised as this was suspected to be an individual issue.

MISCELLANEOUS

Nervous system disorders

A seven-year-old castrated male Huacaya alpaca was observed to display seizure activity on two occasions in June. It was the only animal affected in the herd of 47 alpacas and 3 llamas. This was followed by an acute terminal episode of recumbency and seizures in September. Postmortem examination revealed that the cerebral gyri were subjectively flattened, and the possibility of a bacterial or viral meningitis was ruled out on further testing. Histopathology demonstrated widespread perivascular cerebral oedema typical of clostridial enterotoxaemia. Epsilon toxin was detected in small intestinal contents confirming *Clostridium perfringens* type D enterotoxaemia (pulpy kidney) as the cause of death. The aetiology of the seizures observed in June remained unknown. The history stated that a clostridial vaccine had been administered in May. A review of vaccination protocol with particular attention to timing and vaccine handling was advised.

Generalised and systemic conditions

A 16-month-old farmed, male red deer was euthanased after being recumbent with swollen joints for two days. Postmortem examination revealed a lean, dehydrated carcase with luxated carpii. septic arthritis affecting multiple joints and abscesses within the liver and rumen wall. *Fusobacterium necrophorum* was isolated in pure, profuse growths from multiple sites. Histopathology of the rumen wall abscess showed that the mucosa was not involved supporting haematogenous spread of bacteria. An episode of foot lameness is a risk factor for systemic necrobacillosis in deer, but the entry point of infection in this case was not clear.

A farmed red deer hind with an eight-week-old calf at foot was seen lagging behind the herd and frequently lying down. It could not be caught and was found dead the following day. The group had been wormed with albendazole one week earlier as a previous postmortem examination had

identified evidence of parasitic gastroenteritis including *Haemonchus contortus*. The carcase was very lean with ticks, faecal staining and liquid intestinal contents. Eight thousand four hundred worms were recovered from the abomasum with 21 per cent of these confirmed to be *H contortus*. *Teladorsagia* and *Trichostrongylus* sp were also identified confirming treatment failure and the possibility of additional anthelmintic resistance. The strongyle egg count of 100 eggs per gram (epg) was lower than expected but the liquid nature of the faeces could have resulted in dilution. Liver analysis detected a copper level of 115 µmol/kg DM which is below the marginal band for deer (180-300 µmol/kg DM) indicating that supplementation was required. Further investigation into anthelmintic efficacy was advised.

References:

1 Brihoum M, Amory H, Desmecht D *et al* Descriptive study of 32 cases of doxycycline-overdosed calves. *J Vet Int Med* 2010; 24(5): 1203-10

2 Okura M, Maruyama F, Ota A, *et al* Genotypic diversity of *Streptococcus suis* and the *S suis*-like bacterium *Streptococcus ruminantium* in ruminants. *Vet Res* 2019; 50: 94–109

3 Hosie BD, Greig A, Role of oxytetracycline dihydrate in the treatment of mycoplasma-associated ovine keratoconjunctivitis in lambs. *Br Vet J* 1995; 151: 83-88