SRUC Veterinary Services Monthly Report for March 2025

OVERVIEW

- **Neonatal calf deaths as a result of hypogammaglobulinaemia and subsequent bacterial septicaemia**
- **Swollen head syndrome in broilers**
- **Acute porcine pleuropneumonia due to *Actinobacillus pleuropneumoniae***
- **Malignant catarrhal fever as a cause of death in red deer.**

GENERAL INTRODUCTION

The weather in March was generally sunny and settled. The mean temperature was 6.1˚C which is 1.7˚C above the 30-year average. The central Highlands recorded a mean temperature between 2.5 and 3.5˚C above average. Rainfall figures for the south were between 33 and 50 per cent of the 30-year average with Scotland as a whole having a dry month with 64 per cent of average rainfall. Sunshine hours were 20 per cent above the 30-year average.

DISEASE ALERTS

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

Inhalation of copper containing drenches

Inhalation of mineral drench is recorded as the cause of death in pre-weaned lambs every year with handling for multiple tasks/treatments the common factor in all cases.

Some affected lambs become dyspnoeic and can die while still in the pens, with others dying over the next 24 hours. Histopathology and copper analysis of lung tissues are required to confirm the diagnosis.

DISEASE ALERTS

Babesiosis

Affected animals are often seen alive and may appear weak as a result of severe anaemia. Ticks and haemoglobinuria may be seen. Postmortem examination findings can include anaemia/jaundice, splenomegaly and watery blood. *Babesia divergens* organisms can be seen within erythrocytes on Giemsa-stained blood smears but are harder to detect in samples collected after death. PCR testing of spleen or pre-mortem EDTA blood samples can be required to confirm the diagnosis. There is often a history of naïve animals being introduced to a tick/Babesia area.

CATTLE

Toxic conditions

A group of 45, 18-month-old Aberdeen Angus cross bullocks were outwintered on a stubble field and fed silage every day. The field backed onto houses, and it was reported that garden waste was occasionally discarded over the fence and that a septic tank had overflowed into it. A single bullock was found dead two weeks running, followed by six deaths within 24 hours. The cattle were removed from the field and two carcases were submitted for postmortem examination. In both cases the rumens were well filled, and a handful of white tuber/root fragments (Fig 1) were recovered consistent with hemlock water dropwort (*Oenanthe crocata*) poisoning. This plant grows in ditches and the tubers contain oenanthotoxin which causes convulsions and acute death with a very low lethal dose. It was advised to check ditches and wet areas of the field for evidence of the plant.

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Figure 1 – Fragments of hemlock water dropwort roots recovered from the abomasum.

Generalised and systemic condition

Bacterial septicaemias were diagnosed as the cause of death in neonatal calves from both dairy and beef herds with hypogammaglobulinaemia the common, predisposing factor. Three calves born to beef heifers in a herd of 48 died within a week of birth. The carcase of a 55kg, three-day-old Limousin cross calf was submitted. Concentrated lactoserum, colostrum replacer and cow's milk had been administered following an assisted calving which left the calf unsteady on its hindquarters. Postmortem examination revealed omphalophlebitis, fibrinous peritonitis and polyarthritis. There was marked bruising of the hindlimbs over the hips and stifles with haemorrhage tracking along fascial planes. Pure, profuse growths of *Escherichia coli* were cultured from the lung, liver, peritoneum and left stifle joint. A ZST result of 7.4 units (reference range >20 units) revealed failure of passive transfer with relative foetal oversize and traumatocia being the underlying issue.

A seasonally calving dairy herd reported increasing calf health issues after 1400 cows had calved. Some diarrhoea due to cryptosporidia had been seen. The calves received two feeds of colostrum and were then grouped in pens of 13 and fed 2 litres of milk replacer twice a day. A two-day -old Aberdeen Angus cross calf drank in the morning and was found recumbent and non-responsive in the afternoon. It was euthanased and submitted for postmortem examination. This confirmed hepatosplenomegaly but no evidence of diarrhoea. A good volume of unclotted milk was found in the abomasum consistent with the history. There was evidence of septic arthritis in all limb joints plus the atlanto-occipital joint and the brain was pale with a wet appearance. The findings were suspicious of septicaemia with meningitis and pure growths of a *Klebsiella/Raoutella* spp were isolated from the liver, spleen and carpal joint. The ZST result of 2.2 units (reference range >20 units) confirmed hypogammaglobulinaemia.

Reproductive tract conditions

A large beef herd submitted the fifth aborted calf for investigation as they were concerned about *Campylobacter* following cessation of vaccination. A diagnosis of *Bacillus licheniformis* abortion had been reached in a previous case. A pure growth of *Histophilus somni* was isolated from the foetal stomach contents and histopathology identified a marked pneumonia and suppurative placentitis with vasculitis. *Histophilus somni* can be isolated from the reproductive tract of clinically normal cattle but has also been confirmed as cause of vaginitis and endometritis.[1] Despite that, other studies have suggested that abortion is more likely to occur secondary to maternal bacteraemia than ascending infection.[1]

Circulatory system disorders
A two-year-old purchased Holstein heifer became lame in late gestation and was treated and housed in a straw pen. It was later found recumbent and died during treatment with intravenous calcium. The carcase was in good condition, but rumen fill was very poor and the liver was slightly enlarged and very pale. The right hind foot was swollen with lesions of both interdigital dermatitis and septic pedal arthritis. The right lung contained a large area of haemorrhage, and a thrombus was identified. It was suggested that lameness had led to reduced dry matter intake and subsequent fatty liver. The foot lesion was a potential source of the fatal thromboembolism.

SMALL RUMINANTS

Nutritional and metabolic disorders
Farmer illness resulted in a group of eight ewes being moved onto a pasture without access to water for a period of seven to ten days. Four of the ewes died after a short period of ill health during which they were described as dull before progressing to recumbency. Treatment with calcium/magnesium, a high energy drench and re-introduction of water was not effective. Postmortem examination of a Shetland Cheviot cross ewe revealed pulmonary oedema and pale kidneys with irregularity of the capsular surface, white speckling and grey to white cortical striations. A vitreous humour urea level of 25.3 mmol/l indicated azotaemia likely associated with dehydration. Histopathology showed mineralisation of the glomeruli and Bowman's capsule membrane, but this was not expected to affect kidney function confirming the raised urea to be pre-renal. No other histopathological or neuropathological abnormalities were detected. Reduced renal perfusion resulting in hyperkalaemia leading to cardiac dysrhythmia was considered to be the most likely cause of death and consistent with the observed pulmonary oedema.

Six ewes from a group of 600 were found to be twitching or shaking and unwilling to rise. Two died despite treatment with a range of products including antibiotics, NSAIDs, B vitamins, calcium, vitamin E and a propylene glycol drench. Two live and one dead twin-bearing Texel cross gimmers in late gestation were submitted for postmortem examination. This identified thin body condition, poor rumen fill and diffuse yellow discolouration of the liver typical of hepatic lipidosis (Fig 2). Serum BOHB results of 6.3 and 5.6 mmol/l confirmed a diagnosis of pregnancy toxaemia (reference range <1.0 mmol/l, with results >3.0 mmol/l consistent with pregnancy toxaemia). Grass was reported to be in short supply and ewes had access to ad lib hay and molasses. Ewe rolls were fed via a snacker, and energy and mineral licks were available. Assessment of the ration including forage analysis was advised. It is possible in this case that the gimmers were struggling to compete with the ewes for the hard feed. The submitted animals were thin suggesting that further assessment of body condition across the group was required.

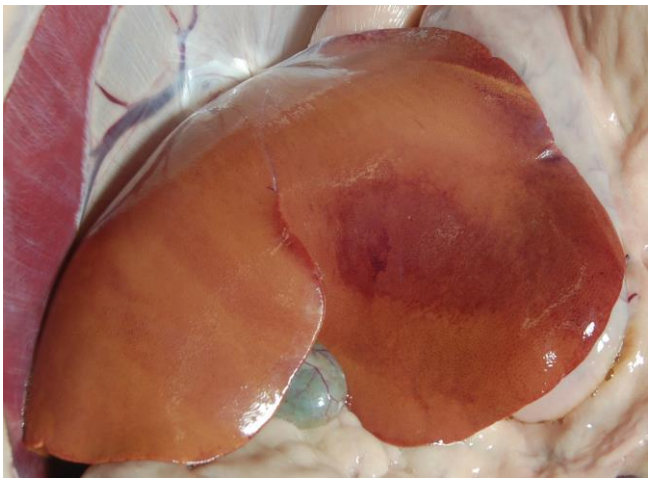

Figure 2 – Hepatic lipidosis as a consequence of pregnancy toxaemia in a ewe

Parasitic diseases
Two hundred leaner Welsh mountain ewes were separated from a flock of 3200 at scanning time and it was noted that they tended to be younger

animals. Ten days later five were found dead and around 20 were diarrhoeic. The carcases of a two and a three-year-old ewe were submitted and found to be emaciated with no body fat and excess pericardial fluid suggesting hypoalbuminaemia. Strongyle egg counts were 2200 and 10,000 eggs per gram (epg) and high numbers of nematodes were recovered from their abomasums and small intestines. (Abomasum: 20300 and 27700 mixed *Teladorsagia* and *Trichostrongyle* spp; small intestines: 28400 and 14100 mixed *Cooperia* and *Trichostrongyle* spp.) Ewes had not been routinely wormed for a number of years and stocking density had not been increased. The only management change was that the ewes were being run in mobs of 1000 and moved regularly whereas previously they had been in smaller groups of 500. It is possible that higher grazing intensity increased exposure to infectious larvae with younger ewes more susceptible to disease.

Mammary diseases

Mannheimia haemolytica was isolated in pure culture from milk samples from two ewes in an indoor flock with a higher-than-normal incidence of mastitis. The animals were reported to be in good condition with sufficient dry bedding. *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 suckling lambs when milk supply is poor can increase mastitis risk. Depending on history, testing to check protein adequacy of the ewe ration, assessment of body condition and screening for other possible predisposing factors, for example maedi visna, can be indicated when investigating mastitis outbreaks.

BIRDS

Two, seven-week-old broilers were submitted alive from an organic flock. Birds routinely arrived as day olds in batches of 100 and were vaccinated against coccidiosis, Marek's disease and infectious bronchitis. They had outdoor access from four weeks of age and were reported to be growing well. Cabbages were introduced to help prevent pecking and the following morning 15 birds had swollen heads (Fig 3) and respiratory signs. Postmortem examination found subcutaneous oedema over the heads of both birds with cloudy fluid within the infraorbital sinus, a small amount of mucus within the upper respiratory tract and little food in the crop and gizzard. Avian pneumovirus PCR proved negative but *Avibacterium paragallinarum* was isolated in one case. This is the cause of infectious coryza which can present as swollen heads and respiratory disease. However, this was ruled out on histopathology which detected marked cellulitis with intralesional gram negative bacteria consistent with *Escherichia coli*. This can cause swollen head syndrome following its introduction via skin abrasions. It was proposed that this had occurred following access to the cabbages. Mycoplasma DGGE/PCR testing detected only commensal species.

Figure 3 – Swollen head syndrome in a broiler following infection with *Escherichia coli*

PIGS

Respiratory tract diseases

A pluck was submitted for further investigation of increased morbidity associated with respiratory disease on a gilt rearing unit. Distribution of lesions was predominantly cranioventral, with consolidation and fibrin adherent to the visceral pleura. The affected lung was discoloured dark red to black. Molecular testing for porcine reproductive and respiratory syndrome (PRRS) virus and swine influenza virus was negative. *Actinobacillus pleuropneumoniae* was cultured from the affected lung and histopathology confirmed severe fibrinosuppurative bronchopneumonia with intralesional bacteria. *Actiobacillus pleuropneumoniae* toxin gene PCR confirmed the presence of Apx 2 and 3, consistent with a moderate virulence potential. This condition is economically important as it commonly results in pulmonary abscesses and/or pulmonary adhesions most often detected during carcase inspection.

Eight sows that had recently moved from straw yards to a farrowing house aborted over a 48-hour period. They were part of a large, closed herd known to be free of porcine reproductive and respiratory syndrome (PRRS) virus. Foetuses from 3 sows were examined with findings limited to opacification and/or tan to red discolouration of placentas and occasional signs of mild serositis. Extensive investigation revealed no evidence of bacterial pathogens, PRRS virus, swine influenza virus, or porcine parvovirus. Histopathology confirmed white matter spongiosis affecting the cerebrum, basal ganglia, and cerebellum in foetuses from two of the three litters. A nutritional, toxic, or metabolic aetiology was suggested and further discussion with the referring veterinary surgeon revealed a previously unrecognised fault in the feed delivery system. This had resulted in an abrupt but brief cessation of feeding at a time of high metabolic demand. This was considered the most likely cause of the abortions highlighting the need to consider non-infectious aetiologies, and the utility of histopathology in the investigation of porcine abortion.

DEER

Three seven-month-old housed red deer from a group of 25 died within 24 hours of becoming depressed and recumbent. Postmortem examination of the submitted carcase identified petechial haemorrhages on the pleura, epicardium and distal jejunal serosa; splenomegaly, enlargement of hepatic and mesenteric lymph nodes and oedema in the mesocolon. Intestinal contents were liquid and haemorrhagic with mural thickening of the terminal jejunum, ileum, caecum and spiral colon (Fig 4). Congestion, scattered haemorrhages and occasional subtle areas of ulceration were noted. Bacterial culture of large intestinal content detected *Paeniclostridium sordellii, Fusobacterium necrophorum* and *Bacteroides* sp, none of which were considered to be the primary cause. Selective cultures failed to detect evidence of infection with *Yersinia* spp. Histopathology revealed lymphoplasmacytic and histiocytic infiltration of the tissues of the gastrointestinal tract and PCR testing of spleen proved positive for ovine herpesvirus 2. Compared to cattle, cases of malignant catarrhal fever in deer are more likely to present with haemorrhagic enteritis or sudden death. Further history regarding possible contact with sheep was sought but not received.

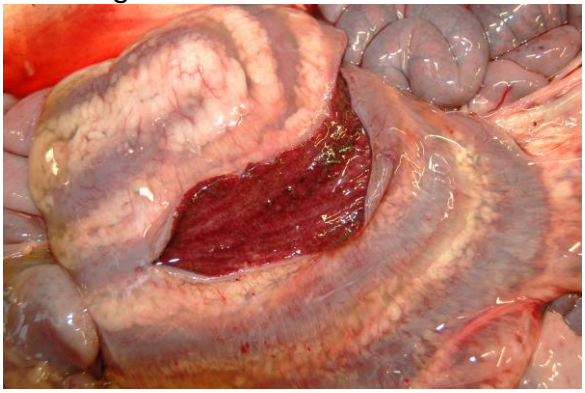

Figure 4 – Haemorrhagic enteritis due to malignant catarrhal fever in a red deer

References:

1. Kwiecien JM and Little PB *Haemophilus somnus* and reproductive disease in the cow: A review. *The Can Vet J* 1991; 32(10): 595-601