SRUC Veterinary Services Monthly Report for June 2024

OVERVIEW

- **Spinal fracture associated with metabolic bone disease in a Wagyu heifer**
- **Delayed swayback in a four-month-old golden Guernsey kid**
- **Chemical pneumopathy following inhalation of a copper containing drench in a five-week-old lamb**
- **Ear tip necrosis and *Trueperella pyogenes* arthritis in weaned pigs**

GENERAL INTRODUCTION

The climate across Scotland as a whole in June was generally unremarkable when compared to the data for the period between 1992 and 2020. There were no weather extremes and the rainfall and sunshine totals equated to 98 and 95 per cent of the thirty-year averages respectively. The mean temperature was 11.2˚C equivalent to 0.5˚C below the thirty-year average.

DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in September 2023. Given similar climatic and production conditions, they could also be important this year.

- **Fog Fever**
  Fog fever occurs when adult animals are moved from poor to better quality grazing. Tryptophan from the grass is metabolised to 3-methylindole within the rumen and then absorbed leading to acute destruction of lung cells. Fog fever is an important differential diagnosis for respiratory disease in adult cattle during autumn and it is important to distinguish it from bacterial or parasitic pneumonia.

- **Louping Ill**
  Clinical signs usually appear after an incubation period of between 8 and 13 days and are a result of viral meningoencephalitis. Following infection, levels of IgM increase before IgG and a predominance of IgM in the haemagglutinin inhibition test confirms recent infection. There are usually no significant findings on postmortem examination and brain histopathology and/or PCR testing can be used to confirm the diagnosis. A history of neurological signs in animals (either purchased or homebred) recently introduced to tick-infested areas for the first time should raise suspicions of louping ill.

CATTLE

Generalised and systemic conditions

Clinical examination of a one-year-old Aberdeen Angus cross heifer ten days after treatment for suspected pneumonia detected tachypnoea, brisket oedema and a heart murmur. It had lost condition but was not pyrexic and died soon after. It was the second animal in the group to die with a similar presentation. Postmortem examination found subcutaneous oedema over the ventral head, neck, and thorax, a serous pleural effusion and a nutmeg liver. These findings were secondary to endocarditis of the right atrioventricular valve. Infection extended into the adjacent myocardium which contained a small number of 0.5 to 1.5 cm abscesses. Further small abscesses were found bilaterally within all lung lobes typical of septic embolic pneumonia. SRUC VS commented that a historical episode of ruminal acidosis with subsequent bacteraemia could offer an explanation given that two animals had died in similar circumstances.

Alimentary tract disorders

A two-month-old Simmental cross heifer was off colour for a few days before death. The carcase was dehydrated and the rumen and abomasum dilated with foul smelling liquid. There was a 3 cm diameter abomasal ulcer in the pyloric region and four, 2-8 cm diameter trichophytobezoars within the stomach contents. A larger 3 x 10 cm trichophytobezoar was found obstructing the proximal duodenum with scant intestinal content distal to this. It is uncommon for hairballs to cause intestinal obstruction, and this was considered to be a sporadic case.

Musculo-Skeletal conditions

Three animals from a group of 60 wagyu cattle purchased for finishing became recumbent after being at grass for two weeks. They were initially treated as cases of suspected carbohydrate overload as supplementary maize, barley, potatoes and turnips were also being fed. However, there was no response to treatment, and they remained bright but unable to rise. Two died and the carcase of a two-year-old heifer in very good body condition was submitted. Autolysis was marked, however disruption to the soft tissues of the ventral lumbar spine was noted, and a fracture of the cranial growth plate of L5 was detected (Fig 1). Analysis of the seventh rib revealed very low bone ash (29.05 per cent, reference range >55 per cent) and liver analysis confirmed both hypocuprosis (135 µmol/kg dry matter (DM), reference range 314-7800 µmol/kg) and hyposelanosis (0.54 mg/kg DM, reference range 0.9-1.75 mg/kg). Analysis of a previously submitted blood sample

also revealed hypovitaminosis A (117µg/l, reference range 249-501 µg/l). Chronic mineral deficiency was considered to have resulted in metabolic bone disease and predisposed this animal to growth plate separation.

Figure 1 – Fracture of the cranial growth plate of L5 in a wagyu heifer

Nervous system disorders
A four-week-old Aberdeen Angus bull calf was euthanased after exhibiting tremor, ataxia and a hypermetric gait since birth. The dam was 16 years-of-age and gave birth to a similarly affected calf in 2023 sired by the same bull. Postmortem examination identified only septic arthritis affecting multiple joints from which *Escherichia coli* was isolated. The brain appeared unremarkable, however histopathology identified cerebellar dysplasia. There was no evidence of exposure to BVD virus and a genetic aetiology was considered likely. No other affected calves had been born.

Circulatory system disorders
An eight-year-old homebred Luing cow was found to be unsteady on its feet and passing dark red urine. It was treated with calcium, magnesium and antibiotics but died shortly afterwards. It was the fifth cow from a group of 30 to die with similar signs over a three day period and was submitted to investigate the losses. Ticks were found on the carcase which was jaundiced with splenomegaly, a pericardial effusion and watery blood. Babesiosis was suspected and confirmed on PCR testing of spleen. The cows had been managed on a lowland farm and this was the first year they had been put on the hill.

SMALL RUMINANTS

Nutritional and metabolic disorders
A four-year-old North country Cheviot ewe was submitted to investigate the possibility of louping ill after it deteriorated rapidly and died 48 hours after being housed to enable treatment of keratoconjunctivitis. Postmortem examination found hay and a large amount of barley within the rumen together with congestion of the mucosa and serosa. The abomasum contained dark green liquid and barley and there were areas of mucosal ulceration and congestion. Faeces were diarrhoeic with no significant findings on bacteriology. A worm egg count detected 900 strongyle eggs per gram. The rumen pH was 5.5 and histopathology confirmed acute suppurative rumenitis consistent with ruminal acidosis.

A four-month-old golden Guernsey goat was submitted to investigate an annually recurring problem with ill thrift. It was the only affected animal from a group of seven, but numerous kids were reported to have gradually wasted away in previous years. It had been recumbent for several weeks but continued to eat and drink. It had received anthelmintic and anti-coccidial treatments plus steroids, vitamins and antibiotics with little or no improvement. The carcase was in very poor body condition. Postmortem examination was unrewarding, but histopathology revealed degenerative neuronal and axonal changes in the brainstem consistent with a diagnosis of swayback. The liver copper result of 183 umol/kg DM was below the reference range for sheep and cattle (314-7850 umol/kg DM). Assessing the copper status of its cohorts plus the sheep and pygmy goats on the farm was advised.

Toxic conditions
A group of 290 lambs were handled to be docked and castrated and an oral anthelmintic and a mineral drench were administered while the lambs were still on their backs in the chute. Six animals were lost over the next 24 hours with froth around the mouth and nose noted in those found dead and dyspnoea observed prior to death in the one lamb seen to be ill. An on-farm postmortem examination was carried out on a five-week-old lamb and fixed tissues submitted for histopathology. This revealed severe acute lung pathology characterised by necrosis of bronchiolar epithelium and suppurative inflammation within the bronchiolar lumen and surrounding alveoli. These findings along with pulmonary oedema and olive-brown granular material within the airways suggested a diagnosis of chemical pneumopathy due to inhalation of a copper containing drench. The lung copper level was high at 987 µmol/kg DM compared to expected levels from control lambs of between 114 and 140 µmol/kg DM. 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.

Generalised and systemic conditions
Immunosuppression following tick transmitted infection with *Anaplasma phagocytophilum* was suspected to play a role in the deaths of multiple lambs on farms across many areas of Scotland during June. The possibility of underlying tick borne fever should not be ruled out based on an absence of ticks on the carcase at the time of death.

A large Romney flock reported the death of five lambs in a week across a number of fields. The sheep had been gathered for multiple treatments two weeks before including the first dose of a pasteurella vaccine. The carcases of two, six-week-old lambs were submitted, and postmortem examination identified marked fibrinous pleurisy/pericarditis, splenomegaly, petechiation and pneumonia in both. *Mannheimia haemolytica* was isolated in systemic distribution confirming *Pasteurella* septicaemia as the cause of death. No ticks were seen but PCR testing of spleen from both was positive for *Anaplasma phagocytophilum* at low CT values indicating a high level of *A phagocytophilium* DNA suggesting this as the predisposing factor.

A two-month-old mule tup lamb was submitted from a group of 100 on a second farm where four lambs had been found dead in the past few weeks. Numerous ticks were present on the carcase and the spleen was enlarged. There were miliary foci in the liver and *Bibersteinia trehalosi* was cultured in systemic distribution. The spleen also tested PCR positive for *Anaplasma phagocytophilum* at a low CT value in this case.

A third flock suspected that tick borne fever may have been the primary factor in the loss of ten lambs that were found dead. The flock had relocated in January 2024 from a tick-free farm to a holding where they were known to be present. A one-month-old Romney cross tup lamb was submitted and found to have localised lung consolidation, splenomegaly and abomasitis with mural emphysema and serositis. *M haemolytica* was isolated in septicaemic distribution and spleen was PCR positive for *A phagocytophilum.*

Musculo-Skeletal conditions
A group of 100 lambs was gathered for administration of their second clostridial vaccination. Ticks were observed and a topical synthetic pyrethroid was applied. Over the next week 15 lambs were reported to lose condition and become recumbent. Five died and the carcase of a six-week-old cross lamb was examined postmortem. This revealed a spinal abscess between T12 and L2. Paralysis had prevented micturition and the bladder had ruptured prior to death. Spleen was PCR positive for *A phagocytophilum.*

Anaplasma phagocytophilum was also detected in two, six to eight-week-old lambs from a different area that presented with hind limb ataxia and paralysis. Lumbar spinal abscesses were found in both (Fig 2), and *Staphylococcus aureus* was isolated in one case. Ticks were not seen on either carcase at postmortem examination.

Figure 2 – Abscess in the lumbar spinal canal in a lamb as a result of tick pyaemia

PIGS

Generalised and systemic conditions
A three-year-old landrace cross sow from a large unit died after a period of illness during which it failed to respond to antibiotic treatment. It was markedly underweight and postmortem examination revealed peritonitis and soft tissue masses of various size and colour associated with and infiltrating the abdominal viscera including the kidneys (Fig 3), liver, uterus and bladder. Histopathology described changes consistent with lymphoma, which abattoir surveys have shown to be the most commonly reported neoplasm of pigs.

Figure 3 – Lymphoma lesions in the kidney of a landrace cross sow

Musculoskeletal conditions

Three, eight-week-old duroc cross pigs were submitted from a 500-sow high health herd to investigate a lameness issue that had been ongoing for a month. Affected pigs were reported to be fine one day and non-weight bearing on one limb the next. There were 2500 animals in the cohort and 60 had been lost as a result. An increased incidence of ear tip necrosis was also noted. The submitted carcases all had bilateral ear tip necrosis (Fig 4a) plus one or more visibly swollen joints (Fig 4b). Pericarditis was also identified in one of the three. *Trueperella pyogenes* was isolated from the affected joints; *Streptococcus porcinus* was cultured from the ear and heart of the animal with pericarditis; and *S porcinus* and *Fusobacterium necrophorum* from the ear of a second. Histopathology confirmed necrosuppurative synovitis and osteomyelitis consistent with *T pyogenes* infection and no evidence of mycoplasmal involvement was detected. The cause of porcine ear necrosis is not clear. It is difficult to control but does not usually negatively affect daily live-weight gains.[1] However in this case the ear lesions were a possible route of entry for *T pyogenes.*

Figure 4a

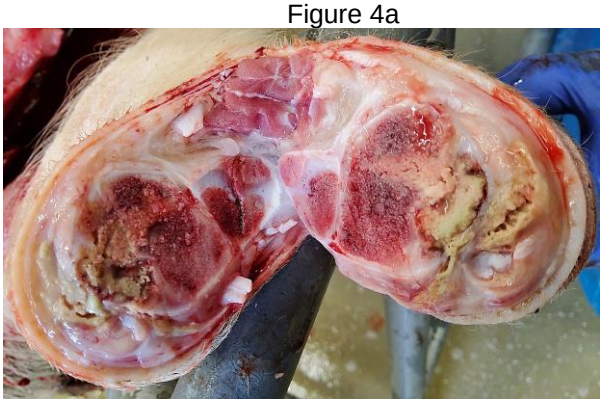

Figure 4b

Figure 4a and b – Ear tip necrosis and septic arthritis in a weaned pig

References:

Malik, M., Schoos, A., Chantziaras, I. *et al.* Porcine ear necrosis in weaned piglets: prevalence and impact on daily weight gain. *Porc Health Manag* **7**, 61 (2021). https://doi.org/10.1186/s40813-021-00240-z