

OVERVIEW

- **Outbreak of blindness in dairy heifers**
- **Spinal cord compression in sheep following incorrect vaccine administration**
- **Sudden deaths due to hypertrophic cardiomyopathy in turkeys**

GENERAL INTRODUCTION

The mean temperature for December was 0.4 °C above the long-term average. It was a dry month especially in the north and north-west, with 79 per cent of average rainfall overall. The north had the best of any sunshine, but further south it was a dull month, giving an overall sunshine figure of 79 per cent of average.

DISEASE ALERTS

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

- **Congenital deformities**
Congenital deformities are an inevitable consequence of the high number of births taking place each spring. In most years the majority of these will be isolated cases. However, multiple cases in a herd/flock or area justify further investigation. Ruling out infection with pestiviruses or Schmallenberg virus is often high on the list of priorities. A good history can guide testing and should include information on sires used plus animal management, the diet fed and products administered during pregnancy.
- **Pregnancy toxæmia in ewes**
A diet that appears adequate on paper may not supply the needs of late gestation ewes if there are issues such as variation in forage quality, inaccurate weighing of components or restricted access to the ration. Blood sampling five twin and five triplet bearing ewes three to four weeks before they are due to lamb will flag up any problems and gives time to make changes. Checking beta-hydroxybutyrate and urea levels is a cost-effective way to monitor ewe energy and protein status. Inadequate ewe energy supply can also present as congenital neurological signs in lambs.

CATTLE

Generalised and systemic conditions

A Holstein heifer fitted and died within minutes of receiving an intramuscular injection of oxytetracycline as a treatment for digital dermatitis. A total of 12 heifers were injected over a 24-hour period and there were two further cases with one animal dying within 15 minutes and the second surviving for 24 hours. Postmortem examination identified the injection sites within the gluteal muscles of all three. The pathology was variable and included slight discolouration, haemorrhage surrounding a central cavity, and an area of firm muscle containing suspected foreign material. Histopathology revealed lesions of both chronic and acute myositis in all cases. The chronic changes were unexpected, appeared to be associated with foreign material, and were considered to be the result of a previous injection at the site. Marked numbers of eosinophils were present. This finding could be explained by the presence of foreign material and/or be indicative of a hypersensitivity reaction. Changes including oedema and haemorrhage within the spleen, liver, lung and heart were consistent with a systemic inflammatory process and an acute hypersensitivity reaction (anaphylaxis) was recorded as the cause of death. SRUC VS postulated that previous injections made at the same site had predisposed to the hypersensitivity reaction. It was advised that the case be reported to the Veterinary Medicines Directorate as a suspected adverse reaction.

A farm operating a dairy beef rearing system purchased 10- to 12-week-old calves in groups of 25 and housed them in a shed containing older calves. The groups were made up of calves bought via the market batched with others sourced directly from a dairy farm. Ten per cent losses were routine but a mortality rate of 50 per cent in one group prompted submission of two carcasses for investigation of the problem. Both calves were reportedly healthy the day before being found dead and had not received any treatment. The group had been on farm for seven weeks and respiratory signs had been noted in other calves. Postmortem examination confirmed poor body condition and bilateral anteroventral lung consolidation. Ringworm and infestation with sucking lice (*Linognathus* sp) was also identified. The rumen pH was 5.2 in both, histopathology verified chronic low-grade acidosis, and bacteriology confirmed *Salmonella enterica* serovar Dublin septicaemia as the cause of death. Respiratory multi-target polymerase chain reaction (MT-PCR) testing of lung tissue detected *Mycoplasma bovis* and *Histophilus somni* in one calf, and *M bovis*, *H somni*, *Pasteurella multocida* and

Mannheimia haemolytica in the other. Multiple disease issues were identified in this case highlighting the risks of mixing young calves from multiple sources. High standards of calf management and stockmanship are essential to avoid poor calf welfare.

Alimentary tract disorders

A four-year-old Aberdeen Angus cross cow was examined following a two-to-three-month history of weight loss and occasional diarrhoea post calving. There had been no response to anthelmintic treatment and tests for Johne's disease had proved negative.

Postmortem examination revealed thickening and slight corrugation of the intestinal mucosa and a mildly fibrosed liver. There was no evidence of a significant parasite burden. Histopathology confirmed a moderate to marked lymphoplasmacytic enteritis with occasional Mott cells, dilation of the mucosal lacteal vessels, indicative of hypoproteinaemia, and variable oedema of the submucosa. Mott cells are plasma cells with multiple circular cytoplasmic inclusions containing condensed immunoglobulins. There was no evidence of bacterial enteritis or a granulomatous enteritis typical of Johne's disease. The findings were considered severe enough to explain the ill thrift and an immune mediated process was considered the most likely cause. The precise aetiology remained undetermined.

Respiratory tract diseases

A six-month-old homebred Limousin heifer was treated with antibiotics, corticosteroids and NSAIDs after being found recumbent and dyspnoeic. No other animals were affected. It died later the same day and was submitted for postmortem examination. The lungs had failed to collapse and were heavy with stable foam in the airways and widespread interlobular oedema. The thyroid gland was markedly enlarged (232 g) (Fig 1) and histopathology confirmed colloid goitre. Histopathology also identified subacute interstitial pneumonia and bovine respiratory syncytial virus (BRSV) RNA was detected by multiplex PCR testing. The detection of BRSV and the presence of both lymphoplasmacytic infiltration and subacute lung injury raised the possibility that BRSV infection was a significant factor in the development of the interstitial pneumonia, although the factors involved in this presentation of BRSV infection remain to be elucidated. The cause of the colloid goitre was not identified but was most likely due to historic iodine deficiency.



Figure 1 – Goitre in a stirk that died of acute interstitial pneumonia

Musculo-Skeletal conditions

An outdoor calving suckler herd reported that multiple calves were presenting with varying degrees of lameness between two and eight weeks-of-age. Issues with navel ill were not described. The cows had been noted to be heavily infested with ticks pre-calving. *Anaplasma phagocytophilum* was detected by PCR in two of three EDTA blood samples from affected calves and considered to be significant. This case illustrates the need to be aware of the potential impact of tick-borne fever in cattle as well as sheep, and at all times of the year.

Nervous system disorders

A group of 48 out-wintered dairy heifers was divided into two groups with those suspected to be in calf housed and introduced to a silage only diet. The remainder were moved to a stubble field with access to the same silage plus fodder beet that remained after harvesting. They were noted to be eating the roots in preference to the silage which was reported to be acidic. Over the following eight days 16 heifers became blind – ten from the housed group and six that were outside. Many progressed to recumbency, and eleven animals died or were euthanased on welfare grounds. Closantel toxicity, lead poisoning, and hypovitaminosis A were ruled out based on history and blood biochemistry. Two animals, one from each group, were euthanased for postmortem examination. Brain histopathology identified cerebrocortical neuronal necrosis (CCNN) and white matter vacuolation in both heifers. Widespread superficial neutrophilic rumenitis consistent with acute

ruminal acidosis was detected in the heifer originating from the group on the beet field. Extensive white matter vacuolation is not a feature of thiamine deficiency or sulphate intoxication, and the cut surfaces of the brains did not autofluoresce when exposed to ultra-violet light, also militating against these possibilities. This combination of CCNN and white matter vacuolation is very unusual in cattle but is similar to post-weaning encephalopathy which is usually associated with water deprivation in lambs. The clinical presentation was also similar as blindness is the main finding in post weaning encephalopathy but, in contrast to cases of primary thiamine deficiency, opisthotonos is rarely seen. There was no history of water deprivation in the current case, but SRUC VS considered that the CNS lesions may have resulted from a combination of factors including diet changes leading to alimentary tract disturbances, such as the balance of thiamine/thiaminases in the rumen, and metabolic disturbances which were then compounded by reduced water intakes in the affected animals.

SMALL RUMINANTS

Generalised and systemic conditions

A one-week-old Charolais ewe lamb was submitted for necropsy after being found dead with no premonitory signs. It had been born alongside a dead twin and perceived to be doing well. No joint or navel ill had been noted and there were no significant findings on postmortem examination. Testing excluded clostridial enterotoxaemia and nutritional myopathy as the cause of death however the zinc sulphate turbidity (ZST) result was low at 3 units (reference range > 14 units).

Histopathology findings were consistent with systemic bacteraemia/toxaemia and the presence of meconium within alveoli suggested a period of perinatal foetal distress. It was concluded that, despite appearing normal, the lamb had been compromised from birth. Bacterial cultures produced mixed growths but given the lamb's age, colisepticaemia secondary to hypogammaglobulinaemia was considered the most likely cause of death. Lambs born alongside dead siblings should be closely monitored as prolonged parturition or placentitis resulting from in utero infection may increase their mortality risk.

A flock of 1500 mule ewes reported chronic weight loss affecting a number of sheep and submitted two gimmers to investigate the problem. Postmortem examination of ewe one revealed mandibular osteomyelitis and secondary lung abscessation while vegetative endocarditis of the left atrioventricular valve was diagnosed in the second. No evidence of any iceberg diseases was detected. Further screening of a wider age range of animals would be required to exclude their

involvement particularly as the flock purchased breeding replacements.

Nervous system disorders

Four ewe hoggs from a group of 350 presented with ataxia and weakness progressing to recumbency. Three died and the fourth was euthanased for postmortem examination. Brain, and vertebrae with spinal cord in situ, were fixed for further dissection. This revealed bilateral pale friable lesions involving the dorsal aspects of the paravertebral muscles, at the level of cervical segments one and two (Fig 2). The lesions extended into the spinal canal, causing compression of the spinal cord and destruction of the adjacent cervical vertebrae. Histopathology of the spinal cord confirmed lateral compression of the spinal cord at cervical segments one and two, and multiple dilated myelin sheaths containing axonal fragments in the lateral and occasionally dorsal and ventral white matter. The paravertebral muscle was focally replaced by necrotic, purulent and histiocytic inflammation, bordered by lymphocytes and fibrovascular proliferation. Well-defined spaces (consistent with removal of oil-based material during processing) were associated with the inflammation. Adjuvant in the *Dichelobacter nodosus* vaccine administered five weeks previously was considered to be the likely source of this material. The final diagnosis was recorded as spinal cord compression due to an injection site reaction associated with incorrect vaccine administration. Adverse reactions following injections in the upper neck are not uncommon highlighting the need for extra care when administering products in this area.

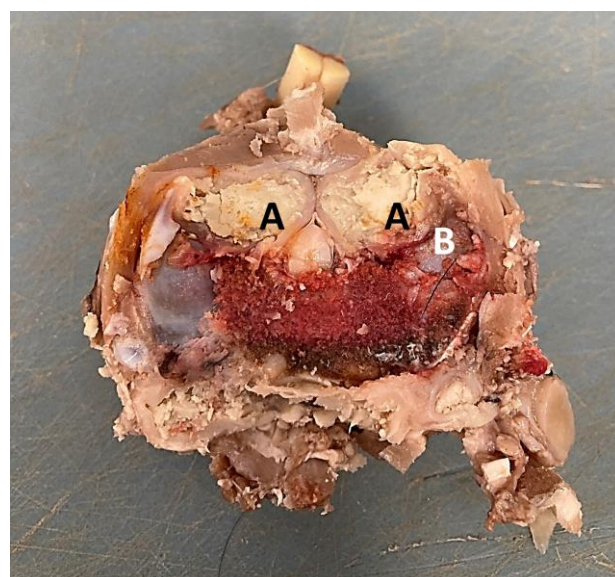


Figure 2 – Section through cervical vertebra showing foci of pale, dry crumbly material within the dorsal paravertebral muscles (A) and destruction of bone (B).

BIRDS

Poultry

A flock owner reported increasing problems with coughing and nasal discharge in a group of 600, five-month-old turkeys over the course of one week. The active ventilation system had been inoperative during this time due to a power cut following storm Arwen. Eight birds were found dead over a 24-hour period and three were submitted for postmortem examination. The left ventricular walls appeared thickened resulting in a reduced lumen volume in all cases (Fig 3). The lungs were dark red/purple and the livers dark red and rounded. These findings suggested hypertrophic cardiomyopathy with secondary acute circulatory failure as the cause of death. There were no specific findings on histopathology. This is typical of this condition which is also known as sudden death syndrome of turkeys. Stress associated with failure of the ventilation system was considered to be the predisposing factor in this case.

Wild birds

Goose, swan and raptor carcasses for avian influenza surveillance dominated wild bird submissions during December. Birds were received from throughout Scotland and the majority tested positive for avian influenza H5N1. For more information see:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1045174/ai-findings-2021.csv/preview



Figure 3 – Hypertrophic cardiomyopathy in a turkey poult