

### OVERVIEW

- Fatal acute pneumonia due to *Mannheimia haemolytica* in dairy cows
- Neospora-associated abortion storm in a dairy herd
- Dental disease as a cause of ill thrift in ewes

### GENERAL INTRODUCTION

Rainfall in Scotland during January equated to 96 per cent of the 1999 to 2020 average. When compared to average figures for the same period, the mean temperature was 0.3°C higher and sunshine hours totalled 122 per cent. Heavy snowfall caused significant disruption in Shetland with Highland and Grampian also affected.

#### DISEASE ALERTS

The following conditions were reported by SRUC VS disease surveillance centres in April 2022. Given similar climatic and production conditions, they could also be important this year.

##### **Bovine abortions due to *Aspergillus fumigatus***

Mycotic abortion most often occurs during the third trimester with spores probably reaching the placenta via maternal blood. *Aspergillus fumigatus* has an affinity for the placenta which provides a suitable environment for rapid vegetative growth. Intercotyledonary areas of the placenta can appear thickened and leathery and the cotyledons are necrotic. Aborted foetuses may have circular skin lesions. *A. fumigatus* is ubiquitous in the environment but avoiding exposure to mouldy forage will reduce the abortion risk.

##### **Congenital swayback in lambs**

Swayback results from vacuolation and demyelination of the white matter in the central nervous system secondary to copper deficiency in the ewe during mid to late gestation. Affected lambs are ataxic or unable to stand and head tremors or more severe neurological deficits can be seen. Diagnosis can be confirmed by histopathological examination of the brain and spinal cord. Low lamb liver copper levels support the diagnosis but concentrate feeding of ewes in late pregnancy can boost foetal copper levels and mask a previous deficiency. There is no effective treatment for congenital swayback and affected lambs should be euthanased.

### CATTLE

#### **Nutritional and metabolic disorders**

Two Holstein calves were submitted for investigation after ten calves died following a period of weakness and recumbency. Affected calves were initially bright but deteriorated gradually and continued to drink despite being unable to rise. They were housed in single pens and fed powdered milk intended for the human market at a rate of 2 litres twice a day and a concentration of 125 grams/litre. Both carcasses were emaciated and weighed 23 and 27 kg at three and four weeks of age. This compares to an average Holstein birthweight of around 40 kg. Both were poorly muscled with no body fat and evidence of rumen drinking. Malnutrition was considered to be the cause of the wasting leading to weakness, recumbency and death. The human milk powder had similar fat and slightly higher protein levels than calf milk replacer, but contained significantly lower amounts of copper, iron, manganese and selenium. It was advised that calf milk replacer should be reintroduced with calves of this age expected to be receiving 900g of milk powder/day.

#### **Generalised and systemic conditions**

A three-year-old simmental cow with a week-long history of haemorrhagic diarrhoea died and was submitted for investigation. Uveitis had also been noted on clinical examination. Postmortem examination findings included grey discolouration of the cornea, minor erosions of the lateral tongue and generalised reddening of the oropharynx. The mucosa of the distal small intestine, caecum and colon was mildly thickened with watery brown content throughout. The spleen tested PCR positive for ovine herpesvirus-2 indicating a diagnosis of malignant catarrhal fever (MCF). A moderate to severe non-suppurative meningoencephalitis typical of MCF was confirmed on histopathology. An alimentary tract form of MCF has been described however, despite the clinical signs characteristic vascular lesions were not detected in the intestines. A more typical "head and eye" presentation of MCF was reported in a ten-month-old Aberdeen Angus heifer that developed sudden onset bilateral corneal oedema and conjunctivitis. The carcass was presented for examination following continued deterioration and euthanasia. The conjunctiva and surrounding sclera were reddened with a blue grey discolouration of the cornea. The submandibular and pre-scapular lymph nodes were enlarged, and small ulcers were detected in the larynx. Occasional small 1 to 3 mm grey foci were noted on the renal cortices as a result of necrotising vasculitis and lymphocytic perivasculitis. Similar changes were also present in the carotid rete.

A four-year-old belted Galloway bull running with a group of 13 cows and calves was found dead with no prior clinical signs. It had grazed on wet rushy ground for three months and had not received any vaccinations. Postmortem examination revealed a copious yellow pleural effusion, fibrinous pericarditis and an extensive area of black muscle within the diaphragm. *Clostridium chauvoei* was detected on fluorescent antibody testing and histopathology confirmed a diagnosis of diaphragmatic blackleg.

### Respiratory tract diseases

Two cows were submitted for the investigation of milk drop, pyrexia, dyspnoea and diarrhoea in a closed 230 head dairy herd. Twenty animals at various stages of lactation had been affected and three had died. Pre-mortem examination of one had detected extensive crackles and respiratory noise on thoracic auscultation. There had been no significant dietary changes and the herd was vaccinated for IBR. Postmortem examination findings were similar in both with extensive fibrinous pleurisy/pericarditis and consolidation of around 40 per cent of the lung parenchyma. *Mannheimia haemolytica* was cultured and no other respiratory pathogens were identified on bacteriology or PCR. Histopathology confirmed that there was no evidence of underlying respiratory pathology. Predisposing factors for pneumonia in adult cows include poor ventilation of the housing or collecting yard, overstocking, buying in adult cows, poor transition and early lactation management, acidosis, or pre-existing lung damage. Many of these could be ruled out based on the history and findings in this case. It has been reported that the incidence of fatal acute pneumonia due to *M. haemolytica* in Dutch dairy cows has increased over the last twenty years.<sup>1</sup>

### Reproductive tract conditions

Four foetuses were submitted from a 120-cow dairy herd after five cows aborted over a two-week period. The herd was housed with robotic milkers and served using artificial insemination. None of the dams were sick and milk drop was not a feature. Bacterial culture of foetal stomach contents was unrewarding and only one of three foetal fluids tested proved positive for antibodies to neospora. However, histopathology detected epicarditis, myocarditis and encephalitis consistent with neospora infection in all four foetuses, and the five dams were seropositive. A litter of puppies had recently been born on the farm and it is known that neospora infection of naïve dogs leads to transient shedding of oocysts and an increased risk of an abortion storm occurring via horizontal transmission.

## SMALL RUMINANTS

### Alimentary tract disorders

Three Lleyn ewes aged between five and six years were presented live as part of a cull ewe screen to monitor for iceberg diseases. Postmortem examination and laboratory testing did not reveal any evidence of infectious disease with Johnes disease, maedi visna, ovine pulmonary adenocarcinoma, caseous lymphadenitis and border disease all excluded as the cause of the ill thrift. No evidence of significant endoparasitism was detected. Dental disease was considered to be the problem with missing premolars, diastema formation and impaction of the buccal gingiva with fibrous material described (Fig 1). This was considered to have caused painful and inefficient mastication resulting in reduced body condition when compared to unaffected cohorts.

One of 35 homebred, eight-month-old Shetland ewe lambs became ill and anorexic and died within 48 hours. The carcase was pale and the mucosa of the proximal 50 per cent of the jejunum was found to have sloughed. There were no significant findings on bacteriology and screening for border disease proved negative. Histopathology confirmed a severe necrosuppurative enteritis with no clear aetiology. A transient torsion resulting in ischaemia of the mucosa was suggested as a possible cause.



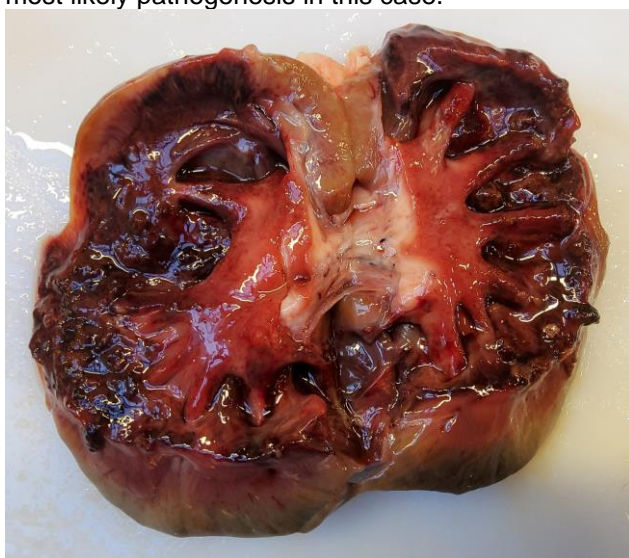
**Figure 1 – Impaction of the buccal gingiva with forage in an ill thriven ewe**

### Renal diseases

A three-year-old Lleyn ewe from a group of 100 was noticed to be thin and slow with a haemorrhagic vulval discharge. It was housed and treated with antibiotics and NSAIDs but continued to deteriorate and died 48 hours later. The owner suspected impending abortion following ingestion of poor-quality silage and submitted the carcase for investigation. The kidneys were enlarged



with pinpoint purulent lesions scattered over the cortex and extending into the parenchyma. The renal pelvises were dilated and filled with red urine and large blood clots (Fig 2). The ureters were also dilated and the bladder was large and difficult to empty. When pressure was applied a thick bloody discharge and clotted blood trickled slowly from the vulva. Bacteriology detected *Proteus* species and *Corynebacterium renale* group bacteria from both kidney and urine. Histopathology confirmed a severe suppurative pyelonephritis and sufficient damage to cause death through renal insufficiency. Ascending infection was considered the most likely pathogenesis in this case.



**Figure 2 – Dilation of the renal pelvis in a ewe with pyelonephritis**

Six hundred lambs from the same source were removed from a rough hill in early October. A barley mix was introduced in mid-November and deaths began 7 to 10 days later. Losses increased after housing in December with a combination of either acidosis or urolithiasis considered likely. Rock salt was introduced at this time to reduce the risk of the latter. Ad lib concentrate feed, straw and a silage/straw mix were also available. The carcass of an eight-month-old Scottish blackface tup lamb was submitted in January with a history of anorexia and malaise of a few days duration. It was thin and sunken eyed with a uraemic smell and matting of the wool on the ventral abdomen. The mid to distal oesophagus was ulcerated and rumen fill was very poor. The bladder was intact but contained only scant thick white liquid. There was no evidence of hydronephrosis but a small amount of white material was present bilaterally in the renal pelvises. The vermiform appendage had sloughed, there was necrotic material within the prepuce and the penis appeared brown and necrotic distal to the sigmoid flexure (Fig 3). A 2 to 3 cm length of the urethra was obstructed at

this point with necrosis of the tissues surrounding the urethra and penis. Struvite crystals were detected in the bladder content. SRUC VS commented that urolithiasis is diagnosed more often in castrated than entire males. Communication between the farmer and the feed company was ongoing at the time of submission.



**Figure 3 – Necrosis of the penis and surrounding tissues secondary to urethral obstruction**

### Skin diseases

Swabs for bacterial culture were received from a five-day-old lamb with pustules in the interdigital space of both hind feet. A number of lambs in the group had been similarly affected over the past few weeks some of which were reported to be lame. *Staphylococcus aureus* and a *Bacteroides* sp were isolated and it was considered that *S aureus* was the primary pathogen. The presentation was unusual and further information was sought as to the bedding type in case abrasion of the interdigital skin was predisposing to infection.

## BIRDS

### Circulatory system disorders

Two 17-week-old gilts were submitted to investigate the cause of four sudden deaths over a 24-hour period in the 70-100 kg group on a 3000 animal, breeding to finishing unit. Postmortem examination revealed fibrinous pericarditis, endocarditis affecting one or both atrio-ventricular valves and evidence of cardiac failure. *Erysipelas rhusiopathiae* was isolated from the affected heart valves. The pigs were reported to have received an erysipelas vaccination which would be expected to prevent outbreaks of disease. However, there was a possibility that this batch of gilts had been missed.

### References:

- 1 Biesheuvel MM, van Schaik G, Meertens NM *et al.* Emergence of fatal *Mannheimia haemolytica* infections in cattle in the Netherlands. *The Vet J* 2021; 268: 105576