

### OVERVIEW

- **Bi-lineage bone marrow hypoplasia of unknown aetiology in two calves from separate herds**
- **Multiple outbreaks of ovine haemonchosis in North-East Scotland**
- **Congenital subaortic stenosis in a kunekune pig**

### GENERAL INTRODUCTION

The mean temperature for August was 13.1°C which is 0.1°C below the thirty-year average. It was the windiest August in a series of 56 years. Scotland overall had 94 per cent of average sunshine hours and 162 per cent of average rainfall. These figures mask a distinct East-West split with areas in the East experiencing average or below average rainfall. In contrast western Scotland experienced its third wettest August since 1836 with over 200 per cent of average rainfall recorded in a number of locations.

### DISEASE ALERTS

The following conditions have been reported by SRUC VS disease surveillance centres in previous Novembers. Given similar climatic and production conditions, they could also be important this year.

- **Systemic pasteurellosis in hoggs due to *Bibersteinia trehalosi***  
Diagnoses of *B. trehalosi* septicaemia frequently peak during November. Disease outbreaks may be triggered by stressful events such as gathering for routine management tasks, introduction of new diets, mixing and transport. Postmortem examination findings of oesophageal ulceration and miliary hepatitis can point towards a diagnosis of *B. trehalosi* septicaemia. Vaccination, controlling parasite burdens, and ensuring adequate trace element status can be of value in reducing losses.
- **Dosing gun injuries and injection site reactions**  
Infection following perforation of the pharyngeal wall by dosing guns, or unhygienic administration of injectable products, can be responsible for losses in groups of sheep at this time of year. Presenting signs may include submandibular swelling, lameness, neurological signs and sudden death. Good technique, animal restraint and well-maintained equipment are key in preventing issues.

### CATTLE

#### Parasitic diseases

The carcasses of a seventeen-month-old Luing cross heifer and a sixteen-month-old Simmental cross stirk were submitted following three deaths in a group of 300. It had been observed that some animals had recently started to lose condition. Postmortem examination found lesions consistent with abomasal parasitism and 74,700 *Ostertagia* sp worms were recovered from the abomasum of the heifer. In contrast only 200 worms were recovered from the stirk which was unexpectedly low - even allowing for carcass autolysis and loss of some abomasal contents. Histopathology was carried out as a result and revealed irregular mucosal thickening, multifocal increases in lamina propria lymphocytes and scattered, distended gastric glands consistent with a diagnosis of ostertagiasis. Strongyle egg counts were 450 and <50 eggs per gram (epg) respectively with the overall findings suggesting that there had been a recent high larval challenge with infection in the early stages of patency. An ivermectin pour on anthelmintic had been administered at turn out and around six weeks prior to the losses. Worming the rest of the group and carrying out a worm egg count reduction test following the use of injectable ivermectin was advised.

#### Generalised and systemic conditions

Bi-lineage bone marrow hypoplasia was diagnosed in individual calves from two herds this month. In the first case a two-week-old Holstein calf became pyrexial with multiple bleeding points over its head and shoulders. Petechial haemorrhages were noted on the gingiva and the decision was taken to euthanase it. The second was a ten-day-old Charolais calf which was pyrexial and tachypnoeic for three days before death. Postmortem examination confirmed carcass pallor and watery blood with marked petechial and ecchymotic haemorrhages throughout both carcasses (Fig 1). A 170 cm long blood clot was found in the jejunum of the Charolais calf. *Salmonella enterica* serotype Dublin was cultured in systemic distribution from this calf, but the extent of the haemorrhage was considered too excessive to be explained by septicaemia. Histopathology of the bone marrow identified bi-lineage hypoplasia in both cases with a complete absence of erythroid cell lines and megakaryocytes. SRUC VS commented that occasional cases of bi-lineage hypoplasia were identified when investigating "bleeding calves" in association with Pregsure® use. Colostral alloantibodies or a genetic cause were suggested as possible aetiologies.



**Figure 1 – Petechial haemorrhages on the jejunal serosa of a two-week-old Holstein calf with bi-lineage bone marrow hypoplasia**

#### **Mammary diseases**

A six-year-old Aberdeen Angus cross cow died ten days after an uneventful calving at grass. It then developed severe mastitis and became recumbent despite treatment with antibiotics and NSAIDs. It continued to eat and drink but developed cloudy eyes and started to shed its hoofs. Postmortem examination confirmed bilateral hypopyon, mastitis in both fore quarters, hepatomegaly with multiple 1 to 2 mm abscesses and suspect renal infarctions. Both hoofs had been lost from the left hind foot and the medial right hind hoof had also been shed. Separation of the hoof wall from underlying tissues was evident when the remaining lateral hind claw was sectioned (Fig 2). *Escherichia coli* and *Trueperella pyogenes* were cultured from the udder and histopathology of the coronary band identified severe suppurative laminitis, with vascular thrombosis. Endotoxaemia secondary to mastitis was considered to be the cause.



**Figure 2 – Separation of the hoof wall in a suckler cow following an episode of toxic mastitis**

#### **SMALL RUMINANTS**

##### **Parasitic diseases**

Aberdeen diagnosed haemonchosis as the cause of death in nine lambs from six holdings during August and an alert was issued to local practices to raise awareness of the risk. All affected lambs were homebred, and body condition was poor in most cases. Deaths had occurred in five of the flocks with mortality rates between approximately 1.5 and 6 per cent at the time of submission. The sixth farmer reported rapid weight loss over the course of a week and typical lambs were euthanased for investigation of the problem. Postmortem examination findings included carcass pallor (Fig 3) plus submandibular oedema and body cavity effusions associated with hypoalbuminaemia. Between 4,400 and 31,200 *Haemonchus contortus* worms were recovered from the abomasum of eight lambs (average 14,050). The ninth case yielded too many worms to count. The SCOPS (Sustainable Control of Parasites in Sheep) manual suggests that clinical signs and death can occur as a result of infection with more than 1,500 *H contortus*. There was concurrent infection with *Teladorsagia* spp in all but one case and strongyle egg counts ranged from 2,750 to 171,600 epg (average 54,031). Two groups had been treated with group 3 anthelmintic products two weeks earlier indicating treatment failure and a need to investigate the possibility of anthelmintic resistance.



**Figure 3 – Severe anaemia in a case of fatal haemonchosis**

Three Texel cross ewes were presented from an unrelated holding on 27<sup>th</sup> August following the death of four ewes from a group of 114 over two days. The lambs had been weaned on 31<sup>st</sup> July and the ewes had been treated with levamisole and returned to the same pasture until 13<sup>th</sup> August when they were moved to ground that had been free of sheep for four years. Postmortem findings were consistent with anaemia and hypoalbuminaemia. Very large numbers of worms (over 100,000 in all cases) were recovered from their abomasa and based on size appeared to be *Teladorsagia* spp. Worm egg counts were lower than expected (950 to 2,650 epg) given the number of worms. Closer inspection revealed that half to two thirds of the worms were *Haemonchus contortus* with the remainder being *Teladorsagia* spp. Many were immature explaining the mismatch between worm numbers and faecal egg count. The burdens were assumed to have been acquired when the ewes were returned to the pasture they had grazed prior to weaning. Weaning had taken place earlier than usual as the farmer had identified poor ewe body condition. L4, L5 and adult *H contortus* take blood meals, with L5s and adults consuming 0.05-0.1ml/day. Where larval challenge is high, debilitation and clinical signs can occur prior to patency. The ewes were treated with abamectin/derquantel and a pooled egg count result of <25 strongyle epg two weeks later confirmed successful treatment.

### Respiratory tract diseases

Fifteen lambs from a group of 850 homebred Romney lambs died over the course of 48 hours. They had been dipped two weeks before and weaned a week later. A number of lambs became lame after dipping but were reported to be improving. Three carcasses were submitted for postmortem examination and unilateral or bilateral pyothorax (Fig 4) was established as the cause of death in each case. Bacteriology of lung tissue produced very mixed growths with *Streptococcus ovis* identified in one. Histopathology was carried out in order to establish whether or not inhalation of dip could have been the initiating factor. This confirmed severe suppurative pleuropneumonia associated with abundant colonies of gram-positive cocci consistent with *Streptococcus ovis*. Dipping was ruled out as the cause of the problem as the lesions were considered too acute and were most severe at the pleura. Screening for tick borne fever and border disease was carried out to look for underlying immunosuppression but no evidence of infection with either was found. The reason for multiple cases of pyothorax remained unclear.

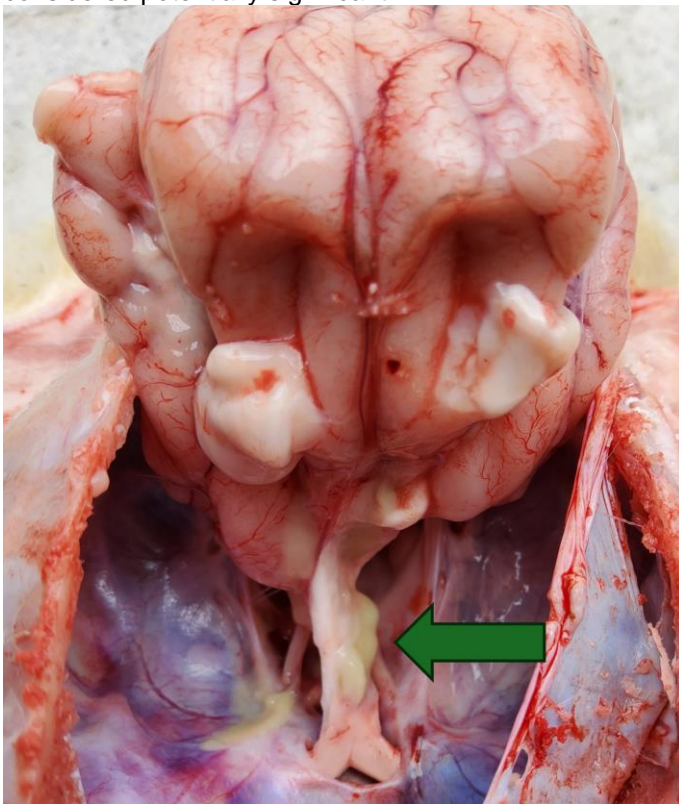


**Figure 4 – Bilateral pyothorax in a Romney lamb**

*Streptococcus ovis* was also isolated from the lung of a five-month-old Boer goat that died rapidly after being found recumbent with opisthotonus. Despite the clinical presentation no evidence of neurological disease was found on postmortem examination or histopathology. Bilateral lung consolidation was the only significant finding, and histopathology confirmed a severe subacute bronchopneumonia associated with coccoid bacteria. This was the only death from a group of 100 housed goats and considered to be a one-off case.

### Nervous system disorders

A ten-week-old Icelandic ewe lamb was noted to be standing alone at grass and was treated with antibiotics and NSAIDs. Over the next five days it became intermittently recumbent and developed nystagmus prior to death. It was the only animal affected from a group of 29. Opaque meninges and purulent material around the optic chiasma (Fig 5) were the most significant findings on postmortem examination. A pure growth of *Streptococcus ovis* was cultured from the brain and considered potentially significant.



**Figure 5 - Purulent material at the optic chiasm in a 10-week old Icelandic ewe lamb**

### PIGS

#### Circulatory system disorders

A six-month-old kunekune pig on a smallholding was found dead and submitted for investigation. The animal had been at grass with four litter mates with access to commercial pellets. The heart was found to be enlarged and very firm on palpation. There was marked thickening of the left ventricular free wall and interventricular septum with a markedly reduced left ventricular lumen as a consequence. A band of thick fibrous tissue within the endocardium was responsible for subaortic stenosis. Multifocal, irregular areas of white and red discoloration were found within the papillary muscles. Histopathology showed that these lesions were caused by replacement of the myocardium with fibrovascular tissue with adjacent areas of acute myocardial necrosis. The latter were also identified in other areas of the myocardium with hypertrophic cardiomyocytes noted in unaffected areas. These changes were considered to be due to hypoxic injury secondary to reduced left ventricular output. Extensive acute myocardial necrosis was the cause of death and likely represented an acute decompensation of chronic, congenital heart disease. This could have been triggered by reaching a critical level of fibrosis whereby the left ventricle no longer functioned, or a sudden increase in oxygen demand e.g. exercise.