Focal symmetrical encephalomalacia in young calves

- Three cases of focal symmetrical encephalomalacia diagnosed in calves
- Diffuse fibrosing alveolitis diagnosed in an adult cow
- Review of abortion in sheep
- Erysipelas septicaemia in outdoor-reared piglets
- Fine sawdust bedding associated with pneumonia in layer chicks

These are among matters discussed in the disease surveillance report for May from SAC Consulting: Veterinary Services (SAC C VS)

May was a month of climatic contrasts. The month began and ended with cool and unsettled weather, however, in between, Scotland enjoyed a dry and sunny spell that brought unusually high temperatures, particularly across the Highlands and Aberdeenshire. Over the entire month the mean temperature equalled the 1971–2000 average. Rainfall varied across the country, but sunshine amounts were above normal. SAC C VS did not record any significant animal health problems during the hot weather and considered it advantageous for late lambing flocks and grass growth.

The Scottish Government consultation into proposals for the next stage of the bovine viral diarrhoea (BVD) eradication programme sought views on proposals to control the movement of persistently infected animals and animals from herds where freedom from BVD has not been demonstrated. Launching the consultation, Rural Affairs Secretary Richard Lochhead said, ‘Eradicating BVD would increase the profitability of the cattle industry – as well as improving welfare, farms and £2000 a year for other cattle by around £16,000 per year for dairy farms – giving a further boost to the reputation of our internationally respected emissions and giving a further boost to the rearing of cattle’.

Cattle

Nutritional and metabolic disorders

Inverness investigated sudden-onset blindness and neurological signs in a two-month-old suckled calf that was housed at night and at grass during the day. The serum vitamin A level of 0.07 µmol/l was significantly below the reference range of 0.87 to 1.75 µmol/l. Blood lead levels were not excessive. SAC C VS considered hypovitaminosis A to be unusual in this case as the calf had access to green forage which should have provided plentiful beta-carotene, the precursor of vitamin A.

Toxic conditions

Dumfries diagnosed lead poisoning in a group of youngstock that had broken into a building where old car batteries were being stored. The Food Standards Agency was informed. Two animals out of the group of 70 had clinical signs that included blindness, head-pressing, abdominal pain and anorexia. A blood sample submitted from one of the affected animals had a lead value of 4.55 µmol/l (reference range <0.2 µmol/l).

Parasitic diseases

Evidence of type II ostertagiosis and chronic fasciolosis was found in a three-year-old Holstein-Friesian heifer that died unexpectedly and was submitted to Ayr for postmortem examination. The heifer had calved two months previously and was in fair body condition. A slight drop in milk production had been noted the day before the heifer was found dead. At postmortem examination the abomasal mucosa had a ‘Morocco leather’ appearance and chronic liver fluke infection was apparent. The pH of the abomasal content was elevated at 5.7. Further investigation found that this heifer had been treated with a pour-on product at housing. While no further animals appeared to be affected, SAC C VS advised notification of this suspected lack of efficacy to the Veterinary Medicines Directorate. In addition, a review of liver fluke control was recommended.

Alimentary tract disorders

Hepatic lipodystrophy was diagnosed by Dumfries in a four-week-old Galloway calf that was ill thriven, weak and had diarrhoea and nervous signs before death. A portion of firm, yellow, liver tissue was submitted for histopathology following an on-farm postmortem examination. This revealed a severe progressive hepatopathy consistent with lipodystrophy. This condition has been recognised in pedigree Galloway calves since the 1960s and is probably heritable (Macleod and Allison 1999).

Ayr diagnosed three cases of Clostridium perfringens type D infection (focal symmetrical encephalomalacia) this month. This was considered unusual as only 10 cases were diagnosed across the whole of Scotland in 2011. Two of the cases, a six-week-old Charolais-cross bull calf and a two-day-old Charolais-cross heifer calf from different farms, presented with seizures before death. The third case, a three-day-old Limousin-cross heifer calf, was recumbent and appeared to exhibit abdominal pain before death. The gross postmortem findings were unremarkable in all three cases save for some enlargement of the mesenteric lymph nodes but neurohistopathology
Surveillance

revealed very severe multifocal malacia and perivascular serum leakage. These changes were considered consistent with focal symmetrical encephalomalacia caused by the epsilon toxin of *Clostridium perfringens*. Zinc sulphate turbidity (ZST) values on blood collected at postmortem examination from the two calves aged less than one week indicated adequate colostrum absorption. SAC C VS advised the use of multivalent clostridial vaccination in these herds to minimise losses in future years.

Aberdeen considered bacterial abomasitis to have predisposed to a case of right-sided dilatation and volvulus (Fig 1) with secondary peritonitis in a six-week-old, Charolais-cross heifer. The calf was treated for bloat the day after being turned out to grass and died two to three days later. At postmortem examination there were several litres of yellow turbid fluid in the abdomen. The abomasum was massively dilated with gas and fluid and the abomasal wall was dark red and oedematous. *Clostridium sordellii* and *Trueperella pyogenes* were isolated on culture of the abomasal wall and profuse watery intestinal contents. *C perfringens* was considered potentially significant in this case, however, it was noted that pathogen was present in this area and the changes spread cranially along both ileal wings with periostitis evident.

**Reproductive tract conditions**

Venereal campylobacteriosis was diagnosed in an Ayrshire dairy herd following submission of vaginal mucus samples as part of an investigation into an infertility problem. Only 14 out of a batch of 25 Holstein-Friesian heifers were in calf after running with a two-year-old Holstein-Friesian bull for four months. A further three heifers had aborted and two had evaded endometritis on ultrasound examination of the genital tract. Vaginal mucus samples were collected when the results of screening a preputial wash from the bull were inconclusive. *Campylobacter fetus* was detected in three out of the eight samples. Concurrently an aborted fetus was submitted and *C fetus* was isolated from the stomach contents. SAC C VS considered these findings to be consistent with a diagnosis of venereal campylobacteriosis. A decision was made to move to artificial insemination to stop further spread of infection in this herd.

**Musculoskeletal conditions**

Perth investigated cases of myositis and cellulitis in two recently calved Simmental-cross heifers from the same herd. A calving jack was used on both heifers and they developed large swellings over the tips of the wings of the ilium within 48 hours of calving. Both developed pyrexia and treatment with antibiotics and anti-inflammatories was ineffective. In the first heifer, the swelling burst on the left side, releasing a very large quantity of purulent discharge, and the animal became recumbent. The second heifer also deteriorated although remained mobile. Both were euthanased. At postmortem examination the first heifer showed extensive necrotic lesions throughout the pelvic area. In the second heifer, with fresher, less widespread lesions, tears were seen in the musculature of the pelvic canal that were consistent with trauma at calving. Myositis was present in this area and the changes spread cranially along both ileal wings with periostitis evident.

**Small ruminants**

**Parasitic diseases**

Thirty-four diagnoses of nematodirois were made across Scotland during May, compared to 10 diagnoses in May 2011. In many instances the lambs showed concurrent high coccidial oocyst counts that often proved not to be significant where speculation was carried out on the oocyst burdens.

**Generalised and systemic conditions**

Varying presentations of manehminiosis were diagnosed in three one-month-old lambs submitted to Dumfries to investigate increasing mortality in a group of 50 pet lambs. One lamb had been seen with mild respiratory signs and treated with antibiotics two days previously. All three lambs had been seen alive at 06.00 and found dead three hours later. Postmortem examination of the lamb with respiratory signs found anteroventral lung consolidation. *Mannheimia haemolytica* was isolated from lung tissue. Both of the other lambs had marked emphysema of the abomasal wall and profuse watery intestinal contents. *C sordellii* abomasitis was suspected and fluorescent antibody testing of abomasal tissue was positive in both cases. However, only *M haemolytica* grew on culture and histopathology confirmed that *M haemolytica* was the primary cause of the abomasitis.

**Alimentary tract disorders**

*Vesirnina enterocolitis* was isolated by Thurso from a faecal sample submitted from one of a group of four, four-month-old Suffolk lambs that were scouring and losing condition. No worm eggs were detected in the sample and only 250 coccidial oocysts per gram were present. *Salmonella* cultures proved negative. The presence of *Y enterocolitis* was considered potentially significant in this case, however, it was noted...
that the organism can be isolated from the faeces of clinically normal sheep. It has also been associated with diarrhoea in weaned lambs, particularly in the autumn and winter.

Diagnoses of both coccidiosis and cryptosporidiosis were much higher in May 2012 compared to the figures for May 2011 (Fig 2). SAC C VS suggests that this may be a reflection of the cold weather in April leading to lambs sheltering together and consequently increased oocyst contamination in the localised environment.

### Review of ovine abortion diagnoses in 2012

Between January 1 and May 31, 2012, 528 flocks submitted fetal material to SAC C VS as part of abortion investigations. This was the highest number of flocks to submit material since 2007 and compares with 408 flocks in 2011. A diagnosis was achieved from material from 253 flocks (48 per cent), as shown in Fig 3.

As expected, Chlamydomphila abortus proved the most common problem, being diagnosed in 19.1 per cent of flocks submitting material. This figure is slightly lower than 2011 when it was diagnosed in 21.5 per cent of flocks. In contrast, the number of flocks diagnosed with abortion due to Toxoplasma gondii increased from 8.8 per cent to 12.3 per cent. Both Campylobacter species and Salmonella species caused fewer problems in 2012, being diagnosed in 2.8 and 1.1 per cent of flocks compared with 5.6 and 4.4 per cent of flocks in 2011. There was little change in the number of flocks in which listeriosis was diagnosed. The breakdown of ‘other’ diagnoses, which accounts for 11.1 per cent of flocks, is shown in Fig 4.

The majority of these are bacterial pathogens that tend to cause sporadic abortions rather than large outbreaks. Streptococcus species included S dysgalactiae, uberis, agalactiae, bovis and phlegmonatum. Pasteurella species included Bibersteinia trehalosi, P multocida and M haemolytica. Border disease virus was detected only once in an aborted fetus, although neonatal lambs were found to be positive for the virus in a further five flocks (not shown).

### Musculoskeletal conditions

A lamb with hindlimb paralysis presented to Ayr had a spinal abscess at T13-L1. The location of the lesion was estimated antemortem as the panniculus reflex ceased at this site. Tickborne fever was suspected as a predisposing factor due to evidence of tick bites and a grossly enlarged spleen. This was the fifth lamb to be similarly affected.

### Nervous system disorders

Aberdeen received twin, one-day-old, Shetland lambs from a holding where approximately 15 lambs were born with various neurological signs. Many affected lambs had appeared blind and some were unable to stand. Similar problems had been seen in previous years. Neurohistopathological examination of one lamb showed bilateral vacuolation in the midbrain and in the cerebellar white matter core. Vacuolation of the white matter was also observed in the spinal cord. The eye was histologically normal. These findings suggested the possibility of a toxic cause but, because the lambs were grazing extensive hill pasture, the exact aetiology remains undetermined.

Dumfries diagnosed meningoencephalitis of suspected viral aetiology in a seven-year-old blackface tup that had developed head tremors and ataxia which rapidly progressed to seizures and recumbency. Neuropathology revealed a generalised mononuclear meningoencephalitis most likely viral in origin. Tests for louping ill virus proved negative and the aetiology remains unknown. There were no further cases.

### Pigs

**Generalised and systemic conditions**

Erysipelas septicemia was diagnosed in a two-week-old piglet from an outdoor unit. The dam was a recently purchased gilt and five of 10 piglets in the litter died suddenly. Postmortem examination revealed generalised congestion of the organs but no specific lesions. Erysipelas rhusiopathiae was isolated in septicemic distribution and SAC C VS considered this to be unusual in unweaned piglets. The erysipelas vaccination status of the gilt was unknown but the findings suggested a lack of colostral antibodies against erysipelas.

Various conditions were considered responsible for illthrift and poor performance in 20 per cent of a group of 800 six-week-old pigs that came onto the unit 10 days before the start of the problem. The group received trimediazine in feed. Infections due to Streptococcus suis serotypes 2 and 3, Haemophilus parasuis (Glässer’s disease) and Staphylococcus hyicus (greasy pig disease) were diagnosed.

### Alimentary tract disorders

Three new incidents of swine dysentery due to Brachyspira hyodysenteriae were diagnosed. One incident was on a unit that was believed to be free of swine dysentery in an area of Scotland where swine dysentery had not been identified for over five years. The disease was suspected during routine inspection of intestinal tracts in the abattoir, where thickening of the colon was noted in two out of approximately 50 pigs. Colitis was evident in both pigs, with the presence of B hyodysenteriae confirmed by both PCR testing and bacterial culture. Following confirmation of the abattoir cases, clinical evidence of swine dysentery was recognised in pigs remaining in the unit. The source of infection was unclear and the abattoir monitoring was considered to have detected the outbreak in the very early stages, allowing rapid action to be taken to prevent the spread of infection. The industry was subsequently informed to ensure rapid identification of any further outbreaks.
Locomotor diseases
A presumptive diagnosis of synovitis due to *Mycoplasma* infection was made in two 14-week-old gilts submitted to investigate lameness and swollen joints affecting 35 of a group of 250 growers. The pigs received a course of in-feed antibiotic medication from nine to 11 weeks of age to control an unrelated condition. The first lame pigs were identified 10 days after antibiotic withdrawal. The pigs failed to respond to systemic penicillin/streptomycin treatment and this prompted euthanasia of two pigs for postmortem examination. Histopathology of affected joint tissues confirmed synovitis in both pigs and Giemsa-stained sections showed organisms resembling *Mycoplasma* species adjacent to the inflamed membranes.

Birds
Infectious bronchitis was suspected as the cause of coughing and poor laying performance in a layer flock of 300. Around 20 birds were affected. Postmortem examination of a single bird submitted to investigate the problem revealed mucus in the nares and infraorbital sinuses. The larynx was inflamed and the proximal trachea was reddened, thickened and contained mucopurulent debris. Although the gross findings resembled those of infectious laryngotracheitis, histopathology revealed changes consistent with infectious bronchitis.

Postmortem examination revealed haemorrhage and consolidation of the lungs of three 17-day-old layer replacement chicks from a group with a history of increased mortality. Histopathology confirmed aspiration pneumonia. The birds had been bedded on sawdust from MDF (medium density fibreboard) waste, and SAC C VS concluded that the very fine dust had been inhaled by the chicks.

Gamebirds
A parasite burden was identified in an adult male black grouse (*Tetrao tetrix*), part of a captive breeding programme, that was found dead in its pen. The bird was in moderate to thin condition. The mucosa of the oesophagus and crop was thickened and covered by grey necrotic debris, and wet preparations demonstrated large numbers of hairworms (*Eudicle us species*). Adult gapeworms (*Syngamus trachea*) were also visible.

FIG 5: Avian tuberculosis lesions in a swan

found in the trachea. SAC C VS advised that the remaining birds be wormed.

Racing pigeons
Mixed viral infections, including pigeon paramyxovirus 1 (PPMV-1), were diagnosed in current-year racing pigeons from four different lofts with a shared history of watery diarrhoea, weight loss and death or culling. Regurgitation of crop contents was described in one of the lofts, and respiratory signs were present in another loft. No significant bacteria, protozoa or helminths were demonstrated. Virology demonstrated PPMV-1 in one of the four lofts, and histopathological evidence of a mixed circovirus and herpesvirus infection was found in another loft. Further testing was not requested or carried out in the remaining two lofts. PPMV-1 infection is a notifiable disease and the Divisional Veterinary Manager of the AHVLA was informed.

Wild birds
Attack by a peregrine falcon (*Falco peregrinus*) was suspected to be responsible for several dead herring gulls (*Larus argentatus*), lesser black-backed gulls (*Larus fuscus*) and eider (*Somateria mollissima*) that were found dead on an island in the firth of Clyde. The heads of some of the eiders had been removed and the muscles of the neck, breast and legs had been stripped to the bone. The gulls showed extensive trauma to the head, back or breast, sometimes with clear puncture wounds visible.

Disease alerts
The following conditions featured in the SAC C VS report for August 2011. Given similar climatic and production conditions, they could also be important this year.

- Parasitic bronchitis and type I ostertagiosis in grazing cattle.
- *Clostridium perfringens* type D disease in growing lambs.
- *Culicoides* species ectoparasitism causing skin lesions in housed pigs.
- *Spironucleosis* in pheasants and partridges.

Presumed trichomonosis was diagnosed in garden birds from five different sites. All affected birds had a necrotic inguinitis suggestive of either salmonellosis or trichomonosis, but cultures did not detect any *Salmonella* species. The condition was seen in greenfinches (*Carduelis chloris*), chaffinches (*Fringilla coelebs*), a goldfinch (*Carduelis carduelis*) and a brambling (*Fringilla montifringilla*). One site described an influx of around 60 greenfinches, followed two weeks later by the appearance of lethargic fluffed-up birds with wet faces and food adherent to their beaks. An estimated 50 greenfinches were found dead over the following few weeks, and lesions consistent with trichomonosis were found in the two birds submitted for postmortem examination.

Avian tuberculosis was diagnosed in an adult female mute swan. The bird was resident on a canal near a lock where it was found dead. At postmortem examination a tumour-like hard structure approximately 30 cm in length was found adjacent to the trachea (Fig 5). The cut surface revealed concentric circles. No obvious granulomatous lesions were observed in the intestinal tract, liver and spleen. About half of the airsac surfaces were cloudy and covered with small light-coloured tags. Acid/ alcohol-fast bacteria typical of *Mycobacterium* species were seen on a smear taken from the tracheal granuloma and histopathology was consistent with a diagnosis of avian tuberculosis.

Miscellaneous species
Deer
*Staphylococcus aureus* was isolated from the metatarsophalangeal joint and surrounding tissues of a captive one-year-old male fallow deer. Several animals in the group showed lameness in one limb that progressed until weight-bearing ceased. Some individuals showed a swelling at the level of the coronary band. The hair was thinned over the distal areas of all four limbs of the submitted animal. Papules and scabs were scattered over the skin in each affected area, giving the gross appearance of a superficial pyoderma. *Dermatophilus* species was not detected in scrapings from the scabs. *S. aureus* was isolated on culture of a joint swab. The incidence of several apparent cases with similar signs was thought unusual, as *S. aureus* is not widely reported as a cause of joint infection in captive deer.

SAC C VS advised restricting access to very rough grazing, which might cause abrasions to the lower limbs, particularly when conditions were very wet and muddy.

Reference

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