Clostridial abomasitis causing deaths of calves in south-west Scotland

- Abomasitis due to *Clostridium sordellii* in neonatal calves
- Unusual ovarian development in an aborted bovine fetus
- Tilmicosin toxicity in lambs due to overdosing
- *Trueperella pyogenes* septicaemia in a commercial boar
- Perforating gastric ulceration in an adult alpaca

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

AFTER an unsettled start, March proved to be a fine and dry month with record-breaking high temperatures for many areas in Scotland. The mean temperature was 3.1°C above the 1971 to 2000 average and rainfall was well below the normal levels expected for the time of year.

The Scottish Government announced the establishment of a strategic management board following the Kinnaird review into veterinary surveillance. The board will work with the Scottish Government and surveillance providers to ensure that Scotland has a disease surveillance system that is fit for purpose and provides adequate protection. Following the announcement, Richard Lochhead, the rural affairs secretary, said: ‘As the First Minister made clear in Parliament last week, through this board we will consult fully with farmers and vets around Scotland as we consider and take forward the recommendations set out in the Kinnaird report.’

Cattle

Generalised and systemic conditions

Screening for Schmallenberg virus carried out on four sets of bovine fetal or neonatal material in accordance with the SAC/AHVLA testing protocol proved negative. In utero infection was considered to be the cause of pathology seen in two calves from different farms. St Boswells identified omphalophlebitis and severe vegetative endocarditis affecting the atrioventricular valves and foramen ovale in a four-day-old calf (Fig 1). Due to the chronicity of the heart lesions, SAC C VS considered that the infection most likely began prepartum and would have severely compromised fetal/neonatal circulation. Postmortem examination of a two-day-old calf submitted to Dumfries found consolidation of all the lung tissue and fibrinous pleurisy and pericarditis. A heavy pure growth of *Pasteurella multocida* was recovered. Again, SAC C VS suspected that infection had commenced in utero because of the extent of the pathology.

Neonatal infectious bovine rhinotracheitis was suspected to be the cause of death of a four-day-old Holstein bull calf submitted to Dumfries. The herd had experienced an elevation in calf mortality in recent weeks. Postmortem examination identified localised lung consolidation and ruminal lesions with the gross appearance of fungal rumenitis, an unusual finding in a calf of this age. *Mannheimia haemolytica* was recovered from the lung lesion; however, histopathology revealed changes consistent with bronchiolitis rather than pneumonia. Histological changes in the rumen were considered to be consistent with neonatal bovine herpesvirus type 1 (BHV-1) infection, although immunohistochemistry proved negative. Screening for bovine viral diarrhoea (BVD) virus also proved negative, although BVD viral RNA had recently been detected in a bulk milk tank sample from the farm. Blood collected at postmortem examination had a zinc sulphate turbidity (ZST) reading of 4 units (reference range >20 units) and SAC C VS considered that hypogammaglobulinaemia most likely predisposed the calf to infection. Calf management on the farm was improved and the cows were given a BHV-1 booster vaccination, having previously received the primary vaccination course. No further cases were reported.
Seven isolates of *Salmonella* Dublin were recovered from cases across Scotland; the same number as were recovered in March 2011. Most outbreaks were associated with calf diarrhea and septicaemia. However, on an Aberdeenshire dairy farm, the organism was considered responsible for 10 abortions or stillbirths in a batch of 35 cows and heifers over a five-week period. A pure growth of *S* Dublin was recovered from the placenta and stomach contents of a full-term fetus that was submitted for examination.

**Alimentary tract disorders**

Two cases of abomasitis due to *Clostridium sordellii* were diagnosed in calves from different farms. Only four cases were diagnosed throughout the whole of 2011. In both cases the history was of sudden death. Gross pathology in the first case, a one-day-old Limousin cross heifer calf submitted to Dumfries, was dramatic. The abomasal wall, which had ruptured, was emphysematous, and the mucosa was inflamed (Fig 2). *C. sordellii* was detected both on culture and by fluorescent antibody testing (FAT). Ayr diagnosed the second case in a dairy heifer calf aged one week. This was the fourth calf to die suddenly on the farm. At postmortem examination, the forestomachs and abomasum were distended with gas and a torsion of the small intestine was noted. Again, the abomasal wall was emphysematous, and *C. sordellii* was detected on culture and by FAT. Although *C. sordellii* can be a postmortem invader in such cases, SAC C VS considered that the organism was responsible for the changes observed.

**Reproductive tract conditions**

Dumfries identified an abnormality of the reproductive tract in an aborted fetus from a suckler herd. Both ovaries were enlarged at approximately 2 cm x 5 cm and they had large numbers of 1 to 2 mm follicles over their surface (Fig 3). The dam was described as appearing very large before aborting, and was suspected to be carrying twins. On histopathology, the changes in the ovaries were similar but not identical to polycystic ovaries in adult cattle. Although the cause of the abnormality and the abortion was not identified, a hormone imbalance may have predisposed to the abortion.

Perth isolated *Scedospermum* species, a rare cause of mycotic abortion, from a fetus of eight months’ gestation. The calf was born alive but died within an hour. The dam, a Limousin cross heifer, was fed silage and showed no other clinical signs. Although no gross pathology was detected on examination of the fetus, fungal hyphae were seen on microscopic examination of the stomach contents and a profuse growth of a *Scedospermum* species was recovered on culture. This isolate was only previously reported as a cause of bovine abortion in Scotland in April 2010 (VR, July 31, 2010, vol 167, pp 157-160).

Real-time PCR can be a useful tool in the investigation of abortion outbreaks, in particular when submitted material is in an advanced state of autolysis. Two such fetuses were submitted to Aberdeen from a herd that had experienced four abortions in a group of 25 cows over a three-week period. BHV-1 DNA was detected by real-time PCR on liver tissue from both fetuses, which were of five and seven months’ gestation, respectively. The affected herd routinely purchased cull cows for fattening and retained any animals found to be pregnant. SAC C VS suspected that the purchased animal was the most likely source of infection.

**Parasitic diseases**

Parasitic gastroenteritis was identified in two five-year-old Cheviot ewes examined by Dumfries as part of an investigation into poor body condition. Both ewes were identified with poor body condition after coming off hill grazing in January. They were separated from the rest of the group, treated with moxidectin and kept on improved lowground pasture. Both ewes continued to lose weight and scoured terminally. The shepherd reported a few similar cases every year, and John’s disease...
Respiratory tract conditions
Aberdeen considered that tilmicosin toxicity caused the death of three lambs and signs of coughing and dyspnoea in a further nine lambs within two hours of being injected to treat foot lesions. The lambs’ weights had been estimated, and it was transpired that they had received four times the recommended dose for the treatment of footrot. In addition, the two lambs submitted for postmortem examination had received the injection intramuscularly in the shoulder, rather than subcutaneously as advised in the datasheet.

Reproductive tract conditions
St Boswells, Edinburgh and Aberdeen all examined lambs with congenital deformities, including achondroplasia, cerebral aplasia, cerebellar hypoplasia, torticollis, arthrogryposis, brachygnathism and kyphosis. All tests for Schmallenberg virus proved negative.

Musculoskeletal conditions
Perth diagnosed septic arthritis due to Streptococcus dysgalactiae in two 10- to 14-day-old Texel cross lambs. Five thriving lambs had developed sudden-onset lameness and joint swellings. One lamb was severely lame on admission, and the other was in lateral recumbency and could not stand. Treatment with oxytetracycline had been unsuccessful. Floculent fluid was found in multiple swollen joints, and the S. dysgalactiae isolated proved to be resistant to tetracyclines.

Nervous system disorders
Comprehensive off-farm sample collection by the private veterinary surgeon permitted Ayr to identify several conditions that contributed to a disease outbreak that presented with abortion, neurological signs and death in a flock in Argyll. Very severe semi-suppurative meningoencephalitis consistent with listeriosis was identified on histological examination of the brain of a ram affected by neurological signs. Blood samples were also collected from affected sheep, and these tested positive for louping ill. IgM predominated in the majority of the samples, indicating recent exposure to infection. Examination of abortion material revealed the presence of inclusion bodies typical of Chlamydia abortus infection on examination of placental smears.

Skin diseases
Perth diagnosed cutaneous actinobacillosis as the cause of an outbreak of facial abscesses in a group of Scottish blackface ewes. The abscesses discharged yellow-green pus from which Actinobacillus lignieresii was isolated.

Pigs
Generalised and systemic conditions
Several causes of death were identified in a batch of 17 piglets, all under seven days of age. The piglets were submitted from an 850-sow outdoor unit. Mortality over the winter was 12 per cent and had not decreased as expected in the spring. At postmortem examination, three piglets had wounds consistent with being killed by predators, 13 showed trauma consistent with dystocia and/or over-laying by the sow and one had been stillborn. Colostrum intake was assessed in two piglets by ZST testing. ZST levels were found to be 15 units and 29 units, respectively. In the first case, the Colostral intake was considered likely to have been slightly low. SAC C VS advised that these deaths were a consequence of the fact that outdoor systems are not conducive to close farrowing management as is possible in indoor farrowing crate systems.

Suspected iron deficiency anaemia was diagnosed in a two-week-old, organic, Tamworth cross piglet that was found dead. The litter of six piglets was housed on straw and had been thriving. At postmortem examination, the blood appeared watery and the heart was enlarged and globular. There was a large volume of ascitic fluid. Iron supplementation had not been used.

A diagnosis of systemic infection due to Treponella (formerly Arcaecobacterium) pyogenes with abortion in multiple sites was made in a three-year-old commercial boar. The boar had a history of signs of illness and malaise over the past two months. The boar had worked the previous week, but relapsed before being found collapsed in a pen. A large cavitated abscess was found in the right seminal vesicle, which was twice the size of the left, and small abscesses were found scattered throughout the left kidney. Fibrinous pleurisy was seen over the right lung and thoracic wall, and periarticitis was visible over the right side of the heart. T. pyogenes was isolated from the lung, kidney, spleen and the large abscess.

Alimentary tract disorders
Swine dysentery was diagnosed on examination of intestinal tracts from three slaughtered finishing pigs. Personnel working in the abattoir undertaking inspections under the Wholesome Pigs...
monitoring scheme noted that 12 pigs in the consignment had lesions suggestive of colitis. They submitted samples after discussion with the producer and his veterinary surgeon. In this instance, swine dysentery was confirmed in a grow-out unit that was remote from the breeding herd. The breeding herd was considered to be free from swine dysentery and veterinary inspection of the unit showed no evidence of the disease. Faecal samples collected from the weaners and growers on the breeding unit showed no evidence of swine dysentery. The source of infection in the grow-out unit is unknown, but the early diagnosis was fortunate as it prevented the potential transmission of infection to the breeding herd by farm staff.

**Birds**

**Poultry**

Six pullets aged five weeks from a group of 120 birds died over a three-day period. One bird submitted for postmortem examination showed thickened caeca containing white, caseous cores. Vast numbers of coccidial oocysts were detected in the caeca and coccidiosis caused by *Eimeria tenella* was diagnosed. A good response to medication of the drinking water with an anticoccidial agent was reported. The birds had received an in-feed anticoccidial drug but SAC CSVS suspected that weight of challenge may have overwhelmed the birds.

**Wild birds**

Salmonellosis caused by *Salmonella Typhimurium* DT 56 variant caused the death of a lesser redpoll (*Carduelis flammea*) and a siskin (*Carduelis spinus*) from two different locations. Both had necrotic ingluvitis, splenomegaly and hepatomegaly, and a heavy growth of *S Typhimurium* was isolated from the liver and intestine of both birds. Redpolls and siskins often flock together in the winter months and congregate at garden feeders, increasing the potential for bird-to-bird spread of disease.

Two mute swans (*Cygnus olor*) were found dead and submitted for postmortem examination as part of ongoing avian influenza surveillance. Postmortem examination revealed that one had severe mycotic airsacculitis from which *Aspergillus fumigatus* was isolated. The second bird had a penetrating wound extending through the abdominal wall, resulting in cellulitis and peritonitis.

**Miscellaneous species**

**Dogs**

Perth suspected hypoxia secondary to pulmonary haemorrhage to be the cause of seizures and death in a 15-month-old male springer spaniel. The dog had shown a sudden-onset cluster of short seizures one evening and, despite appearing to recover, developed further seizures the next morning and died. Postmortem examination revealed pulmonary haemorrhages and cardiac tamponade. Blood biochemistry from a premortem sample did not show any abnormalities, and toxicology found no evidence of rodenticides or pesticides. Histopathology revealed focal haemorrhages in the renal interstitium and the portal areas of the liver, as well as severe haemorrhage into the alveoli of the lungs. These changes gave rise to the suspicion of a coagulopathy, although the exact cause remained undetermined.

**Camelids**

A perforating stomach ulcer was diagnosed in a six-year-old female huacaya alpaca. The animal became inappetent and recumbent. Clinical examination was unremarkable; however, the animal died 36 hours later. Postmortem examination revealed a large volume of serosanguineous fluid in the abdominal cavity mixed with large fibrin tags and free ingesta. A convolute of fibrin and ingesta was present in omentum situated over the stomach. In the distal stomach compartment, an area of approximately 100 cm² showed signs of extensive inflammation and thickening; within this area, a hole, approximately 1 cm in diameter, had perforated the stomach wall. SAC CSVS notes that lethal stomach ulcers are not infrequent in alpacas and are often associated with stress.

**Guinea pigs**

Gastric dilation and volvulus in an adult guinea pig was diagnosed in a two-year-old male guinea pig that presented as a sudden death. Postmortem examination revealed some small ecchymotic haemorrhages in the lungs and a vastly distended stomach, which occupied almost half of the abdominal cavity (Fig 5). The stomach was displaced caudally and to the right by a dilated caecum. Gastric torsion was evident, with a 180° twist. The caecum itself was displaced to the left side of the abdomen, and torsion of the caecum and a portion of ileum and jejunum was noted, with some necrosis of the twisted omentum and adjacent connective tissues. Peritonitis was present and a quantity of dark murky fluid was found in the abdomen.

SAC CSVS advised that, although more commonly seen in dogs, gastric dilation and volvulus is recognised in guinea pigs. Gastric dilation may occasionally develop as a result of ileus and gastrointestinal stasis, a common condition in guinea pigs.

**Foxes**

A fox found dead under a garden shed was submitted for postmortem examination because of suspicions that foxes in the area had been killed by poison. At postmortem examination, a malodorous discharge was noted from the left ear. Removal of the brain revealed an abscess on the left side at the level of the inner ear and auditory nerve. Death was due to abscessation of the brain secondary to an ear infection. Screening for poisons did not identify any significant residues.

**References**


doi: 10.1136/vr.e3928