

# Quarterly review of diagnostic cases – October to December 1999

## Alpha Scientific Ltd

### Cattle

In three recent cases involving adult dairy cattle there was a history of a sudden drop in milk yield. One cow had lost weight rapidly and another was unthrifty. Haematology revealed anaemia in all three with haematocrit readings ranging from 0.18 l/l to 0.23 l/l (reference range 0.24-0.36 l/l). Moderate stippling of erythrocytes was seen in all smears. Another feature, evident on biochemistry of all three, was marked hypomagnesaemia with serum magnesium concentrations ranging from 0.21 mmol/l to 0.28mmol/l (reference range 0.49-1.15 mmol/l). These findings confirmed chronic hypomagnesaemia or 'Taranaki anaemia' as the cause of production loss. In this condition, erythrocyte maturation is affected with a fault in the incorporation of iron into haemoglobin, resulting in the characteristic anaemia with stippling and nucleation of erythrocytes.

Two yearling beef cattle were found dead in close proximity to a natural water supply on a farm that had a history of natural arsenic contamination of ground water. Analysis of a fresh liver sample revealed an arsenic concentration of 11mg/kg, confirming the diagnosis of **arsenic toxicity**. Concentrations of 2-15 mg/kg are consistent with acute toxicity.

### Horses

An 11-day-old foal had diarrhoea for 2 days with a minimal response to treatment. Faecal tests for *Salmonella* species and rotavirus were negative, but the faeces contained moderate numbers of **cryptosporidia** oocysts. Examination of faeces for cryptosporidia from scouring foals is rarely requested, suggesting the condition may be under-diagnosed

The liver of a young foal which died contained multiple discrete and coalescing foci of necrosis and inflammation. These were relatively large and randomly distributed. Histologically the lesions were suggestive of *Bacillus piliformis* infection, and a silver stain confirmed the presence of large numbers of bacilli in sheaves and bundles at the margins of the foci of necrosis.

A few days after birth, a foal died suddenly. A prompt necropsy showed a mildly patent ductus arteriosus and thickened reddened intestines. Histology revealed intestinal lesions consistent with **clostridial enteritis**, with lysis of the superficial mucosa, heavy colonisation by large Clostridia-like bacilli, acute inflammatory changes with vasculitis in the submucosa, and gaseous changes in the submucosa and lymph nodes.

### Contributed by

Bronwyn Smits, Roger Ellison, Angus Black, Alastair Johnstone, Keith Thompson

Email for correspondence: bsmits@alpha-scientific.co.nz

Each quarter, *Surveillance* publishes a review of selected diagnostic cases handled by New Zealand's veterinary diagnostic laboratories. These cases do not necessarily reflect our national disease profile but they do represent diseases of particular importance to our livestock industry.

## AgriQuality Laboratory Network

### Cattle

In a shed of 100 4-week-old calves, fifty were coughing. Some had elevated rectal temperatures and occasional calves were moribund. One calf was euthanased and necropsied. Multiple small abscesses were present throughout the lung and the cranial and ventral lung lobes were red and firm. *Haemophilus somnus* was cultured in a heavy growth from lung tissue.

A 1-year-old male Friesian was one of a group of yearling cattle which suddenly developed severe respiratory distress and died. The lungs were diffusely red and large gaseous bullae were present distending the interlobular septa. Microscopically, there was severe diffuse fibrinous and necrotising alveolitis and bronchiolitis with hyaline membranes in alveoli. Interlobular septa were distended by gas and oedema fluid. The cattle had been recently moved to new pasture, and the case was consistent with **acute interstitial pneumonia**. L-tryptophan and 3-methylindole are implicated in the pasture-associated form of this disease in cattle.

### Pigs

Wet moist exudative skin lesions were present over the entire body of all of a group of 6-week-old weaner pigs. The condition was contagious. On culture *Staphylococcus hyicus* was isolated, confirming a diagnosis of **greasy pig disease**.

Piglets aged 1 to 4 weeks showed weakness and trembling, and died within a 24-hour period. No gross lesions were seen at post-mortem, however on histopathology there were increased numbers of neutrophils in the liver, lung and brain, and fibrin thrombi were present in small blood vessels of all tissues. *Streptococcus suis* was cultured from the fresh tissue of four piglets sampled.

### Dogs

A 15-month-old Great Dane was presented acutely ill, losing weight, polydipsic and polyuric and with a urine specific gravity of 1.005. Blood tests indicated acute inflammation and hypercalcaemia (3.83 mmol/l, normal 2.00-3.00 mmol/l). **Cholecalciferol poison** had been laid recently and the dog had had access to it. Tests on a blood sample taken the following day revealed that the hypercalcaemia had increased to 4.78 mmol/l and the dog was euthanased.

Cholecalciferol poison interferes with calcium metabolism, leading to widespread mineralisation and renal failure.

### Ratites

A 3-year-old male ostrich died suddenly. At necropsy, there were haemorrhagic changes in the intestine and peritoneal cavity, and histology revealed marked **hepatic haemosiderosis** and **severe fibrinonecrotic enteritis**. The pigment accumulation indicated that

the bird had been unwell for some time. There had been a diet change a week before the death which could have contributed to the enteritis.

## Poultry

An adult bird was presented for necropsy for suspected infectious laryngotracheitis. The bird had been given ILT vaccine 3 weeks earlier and the farmer was concerned that the vaccine had been ineffective or had precipitated the disease. At necropsy it was in fair condition, moderately dehydrated with a mild splenomegaly and a severe necrotic laryngotracheitis. Histology of the larynx revealed an extensive area of plaque-like epithelial proliferation overlain by a necrotic mass containing numerous bacterial colonies. Several large intracytoplasmic inclusions typical of **avian poxvirus** were noted in the epithelial cells.

## Compiled by

Celia Hooper, Catherine Harvey, Catherine Williamson, Tony Fraser, Alan Julian, Stella Bastianello, Fraser Hill, Janice Thompson, Phil McKenna  
Email for correspondence: juliana@agriquality.co.nz

## LABNET Invermay Ltd

### Cattle

In a group of calves and yearlings, one yearling died suddenly and one with a bloody scour was euthanased. Histology showed haemorrhagic enteritis and the lesions were consistent with **adenovirus infection**. This is an unusual condition which occurs sporadically in 1 to 8-week-old calves and also in 9 to 12-month-old cattle during the winter months.

Several cases of **Salmonella Brandenburg** infection were recorded both in cows with dysentery and in calves 1 to 3 weeks old which were scouring yellowish fluid and very dehydrated but still bright. In one case in which 2-week-old calves were dying there was concurrent cryptosporidiosis. **S Typhimurium** was isolated in several cases involving calves from 3 days to 3 weeks old. Diarrhoea, dullness and fever were the presenting signs. Other cases of *S Typhimurium* infection involved individual recently calved cows which were dull with profuse watery and haemorrhagic diarrhoea associated with a sudden drop in milk production and inappetence. **S Hindmarsh** caused the death of 15 calves with 10 affected in a group which was not being managed well. The calves were 5 days to 2 weeks old, there were large numbers in the pens, the water supply was not potable and there was a high coliform count. The majority of calves had watery eyes and were thin.

### Sheep

From 3 weeks of age, lambs born to Dorset ewes developed **severe photosensitivity**. Histology of affected skin showed acute fibrinous necrotising ulcerative dermatitis typical of photosensitisation. The history of signs beginning at 3 to 4 weeks of age is similar to that of congenital photosensitivity in lambs from the Corriedale and Southdown breeds and their crosses. This condition is inherited as a single recessive gene and is caused by a congenital defect in the excretion of biliary pigment including phylloerythrin (the photodynamic agent).

Sudden deaths occurred in hoggets in good condition about a week after shearing. Necropsies showed abomasitis and steatosis, and **Salmonella Typhimurium** was cultured from abomasal contents. Salmonellosis is unusual in sheep in spring.

**Clostridial disease** caused various syndromes. **Enterotoxaemia** was recorded in lambs from 2 weeks to 2 months old. The lambs were generally well-grown with full stomachs. Diagnosis was based on histological examination of the kidneys. A **clostridial metritis** caused the death of two or three ewes after lambing. **Clostridial septicaemia** was recorded in a neonatal lamb which had been hand fed for a short time. **Tetanus** was the tentative diagnosis in hoggets which were found down or dead, with extensor rigidity. They had not been vaccinated and brain histology showed no significant abnormalities. **Clostridium sordellii** can cause significant losses as in a case in which the organism was cultured from the uterus and udder of a vaccinated ewe, one of a large number which had died around lambing. In another case, 20 ewes in a flock of 8,800 near lambing died suddenly over about a week. Autolysis was rapid, Gram stains of rib marrow smears showed Clostridia-like organisms and *Cl sordellii* was isolated from one of two samples cultured. This organism is a cause of occasional sudden deaths usually without lesions, and it is not included in clostridial vaccines.

### Deer

**Malignant catarrhal fever** was relatively common in central parts of the region. In one big outbreak 20 red weaners died of the disease over a period of 6 weeks. All were found dead or dying with blood oozing from the anus. The animals were in good condition and on abundant grass. At necropsy they had a haemorrhagic enteritis and the histological lesions were typical of MCF.

Four fawns in a group of 20 to 30 were born dead. There was oedema around the neck and enlargement of the thyroid glands. The weight of the thyroid glands was 17 grams and histology confirmed thyroid hyperplasia, probably due to **iodine deficiency**.

### Pigs

Two porkers in a line of 40 were condemned at the works because of arthritis. *Erysipelothrix rhusiopathiae* was isolated from a joint swab, confirming that the problem was **chronic erysipelas**. Two of the joints examined grossly, the elbow and stifle joints, showed mild to marked congestion and proliferation of the synovium with a normal joint surface, typical of the chronic arthritis caused by this bacterium.

### Dogs

Accidental poisoning cases this quarter included several cases of accidental **anticoagulant poisoning** and one of **cholecalciferol poisoning**. There was also a case of **progesterone toxicity** in a dog which ate intravaginal progesterone-releasing devices.

### Ostrich

In a group of 100 ostrich chicks 5 to 6 days old, 20 died after developing diarrhoea. Necropsy showed a reddened intestine. Histology revealed acute enteritis associated with clostridia-like organisms and splenic lymphoid depletion, consistent with

**clostridial enteritis.** *Clostridium perfringens* was isolated from an intestine sample. On a second ostrich farm, the same condition occurred in chicks 3 to 4 weeks old.. Soil ingestion may predispose to this condition.

## Compiled by

Gary Clark, Marjorie Orr, John Gill

Email for correspondence: clarkg@labnet.co.nz

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## LabWorks Animal Health Ltd

### Cattle

In the last year, *Haemophilus somnus* was cultured from vaginal swabs from cows on four farms. The presenting history was several cows with a suppurative vaginal discharge and greater than normal numbers returning to service. In one of these herds approximately 15% of the herd were still cycling in mid-January and most of these cows had a suppurative vaginal discharge. From cows in two of the herds *Ureaplasma species* was also isolated. Each of these organisms can cause vaginitis and infertility. *H somnus* typically causes a suppurative vaginitis and *Ureaplasma species* typically causes a lymphoid vaginitis with small white/grey nodules (2-4mm) on the mucosal surface. They can also be isolated from asymptomatic carrier animals.

A calf died suddenly after a brief episode of ataxia. Necropsy showed bile stasis in the liver, thick inspissated bile in the gall bladder and petechial haemorrhages in other abdominal organs. Microscopically there was bile stasis, hepatic necrosis, haemoglobinuric nephrosis and interstitial nephritis, and polioencephalomalacia. This pathology was indicative of the thrombocytopaenia and thiamine deficiency caused by **fern poisoning**. Ring fern (*Paesia scaberula*), which had been grazed, was found on the farm.

### Sheep

Progressive hind quarter ataxia developed in a 2-month-old lamb. Histology of the spinal cord revealed the symmetrical demyelination typical of **swayback** caused by copper deficiency.

### Deer

It was suspected that an aged red deer hind which showed progressive weight loss had Johne's disease. However, no evidence of Johne's disease was seen on histological examination of the intestine and mesenteric lymph nodes. Intestinal crypt necrosis and crypt abscesses were present on histology, similar to lesions in cattle with **bovine virus diarrhoea/mucosal disease**. This type of lesion has been recorded in fallow deer with BVD. BVD and hairy shaker disease are pestivirus infections of cattle and sheep respectively which are widespread in New Zealand and which have been known to infect other species.

About 8% of hinds in a red deer herd aborted. No significant pathogens were isolated from foetal stomach contents, but on histology the foetal heart muscle had lesions of **white muscle disease**, with widespread myocardial necrosis and mineralisation. Blood samples from the hinds had adequate selenium concentrations, and it was suspected that vitamin E status was low or

that selenium status had been low earlier in the gestation period. On another farm, skeletal nutritional myopathy was diagnosed when six of 100 deer fawns died over a 2 week period and histology revealed skeletal myopathy and congestive hepatopathy. Selenium and/or vitamin E deficiency is well recognised as a cause of foetal and perinatal lamb deaths, but it is not often recorded in deer.

A young red deer stag was velveted in the morning and found dead that afternoon. At necropsy there were petechial haemorrhages in the mesentery and beneath the intestinal serosa. Histology revealed eosinophilic inflammatory changes in the liver, lungs, intestine and lymph nodes consistent with **xylazine hypersensitivity**.

Hypersensitivity to xylazine occurs occasionally after velveting and similar reactions to xylazine have been recorded in sheep and humans, producing pulmonary oedema.

### Dog

A farm dog died with a history of access to the anticoagulant vermin poison **pindone**. There was gastric erosion and haemorrhage and dark swollen kidneys. Microscopically there was severe haemorrhagic and necrotic gastritis and nephrosis consistent with anticoagulant toxicity.

### Rabbit

In a wildlife park, a vaccinated doe rabbit had a litter of young and at 3 months of age the whole litter died. The pathology was typical of the calicivirus infection, **rabbit haemorrhagic disease**. In another case, eight of nine young doe meat rabbits died and post-mortems of three showed gross and histological pathology typical of RHD. The does had not been vaccinated.

### Ostrich

Three 1-month-old ostrich chicks died suddenly. At necropsy the birds had numerous small white foci in the liver which on histology were small foci of hepatic necrosis consistent with a bacterial septicaemia. Similar pathology has been described in clostridial hepatitis, but special stains on liver sections did not confirm the presence of clostridial bacteria. On culture both an **alpha haemolytic Streptococcus species**, possibly *Streptococcus viridans*, and *Candida albicans* were isolated.

Histological examination of tissues from 7-day-old chicks which had acute diarrhoea revealed fibrinonecrotic bacterial enteritis. In gram-stained sections, organisms resembling *Clostridium* species were seen among other bacteria in the necrotic tissue. *Clostridium perfringens* and an alpha-haemolytic streptococcal organism most closely resembling *Streptococcus viridans* were isolated. *Streptococcus viridans* has been associated with oral and respiratory lesions in ostriches.

## Contributed by

Jim Hutton, Donald Arthur, Karen Bailey

Email for correspondence: kerrim@labworks.co.nz

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Regional laboratory reports edited  
by Marjorie Orr