

Quarterly review of diagnostic cases – January to March 2002

LABNET Invermay

Cattle

Four cows had aborted or showed signs of vaginitis, and a range of tests was carried out on serum, silage and vaginal fluid, including paired serology. The only abnormalities were a greater than fourfold increase in IBR titre after two weeks, and isolation of *Actinomyces pyogenes* from a vaginal swab. The abortifacient strain of IBR has not been reported in this country. The history of vaginitis suggested **infectious pustular vulvovaginitis** and the abortion may have been caused by *Actinomyces pyogenes*, a sporadic cause of abortion.

An aged dairy cow had an interdigital lump between the digits of both back feet. Histology of a biopsy sample from one gave a diagnosis of **interdigital skin hyperplasia**, a condition seen most commonly in heavy fat bulls and mature cows. A similar condition, bovine interdigital dermatitis, involves spirochaete infection and was ruled out by special stains.

Twelve outbreaks of enteric **yersiniosis** were recorded in calves four to six months old. The affected groups were usually described as scouring and unthrifty with some deaths. In at least two outbreaks, some calves had dysentery and there were some deaths.

Polioencephalomalacia was diagnosed in nine cases. Clinical histories ranged from atypical scouring then death to the more typical neurological signs and blindness leading to recumbency. The disease often seems to be precipitated by a change in diet, often involving a move from sparse to lush pasture.

Five-month-old calves were grazing pasture that had been top-dressed the week before, and fertiliser could still be seen on the pasture. One developed neurological signs and bloat, and it died. Another showed muscle weakness and staggy gait with fine muscle fasciculations and flocculent swellings of the front fetlocks. Clinical biochemistry tests demonstrated hypocalcaemia, and a serum fluoride concentration was elevated at 0.21 mg/l (normal < 0.19), confirming a diagnosis of **superphosphate poisoning**.

Two engorged female ticks found on two-year-old dairy cows in Southland and submitted for identification were female *Haemaphysalis longicornis*.

Sheep

Blood samples from a group of one-year-old sheep with diarrhoea and suboptimal growth rates revealed normal serum selenium concentrations, but *Yersinia pseudotuberculosis* was isolated from a faecal sample. The organism can cause diarrhoea and occasional deaths in young sheep.

Deaths occurred in a group of four-month-old Merino lambs six to

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

eight weeks after tailing and mulesing. Necropsy showed severe anaemia and jaundice with excess pericardial fluid, and haematology confirmed severe anaemia. *Eperythrozoon ovis* organisms are readily detached from erythrocytes and, although none were observed in smears, **eperythrozoonosis** was the probable cause of death. Mulesing is believed to transmit the disease in New Zealand. In Australia biting insects are involved.

Polioencephalomalacia has occurred in sheep as well as cattle this quarter. In one outbreak, 20 of 2300 lambs were found dead over the course of a few weeks. In another, 20 lambs had died in four weeks and another involved 30 deaths. In most cases, affected sheep died after being down for a couple of days, and in all cases the diagnosis was confirmed by histology. History sometimes involved a recent change of pasture. In one outbreak in older sheep, several deaths had occurred and recumbent sheep lingered for some days before death.

In many cases routine faecal egg counts showed significant numbers of strongyle eggs in apparently normal sheep. Some farmers wait until sheep 'look wormy' before drenching but, as in these cases, **worm burdens** are often significant before sheep begin to scour. In four outbreaks there was severe diarrhoea and some lambs were dying. In one case, *Haemonchus contortus* worms were identified. *Haemonchus* problems are not common this far south, but occasional outbreaks occur in February and March.

Lambs from two to six months old developed hind limb paralysis. No spinal abscesses were seen on necropsy and no evidence of white muscle disease. However, histology showed spinal cord lesions of neuronal chromatolysis and demyelination consistent with **enzootic ataxia**, and a liver copper concentration was in the marginal range, confirming the diagnosis.

Fifteen of 200 Merino ewes showed unusual signs, which began with lip licking, darkening of the nose and a mucoid discharge from the nose, progressing to anorexia, tremor and death within three days of the first signs. Some affected sheep survived. Histology showed liver lesions typical of **chronic copper toxicity** and a spongiform encephalopathy of a type that has also been associated with this condition. A liver copper concentration of

6820 µmol/kg (toxic range >3000) confirmed the diagnosis. The ewes had been grazing clover-dominant pasture in an old orchard and previous copper spraying of fruit trees had probably resulted in increased pasture copper content and caused the poisoning.

About 15 Merino lambs died after developing neurological signs, and histology of one revealed lesions of **spongiform leucoencephalopathy**, similar to the presumed inherited spongiform leucoencephalopathy of Romney lambs (described by Manktelow et al, *New Zealand Veterinary Journal* 45, 199-201, 1997).

Deer

Cryptosporidiosis was a significant cause of death in fawns up to two weeks old, with four outbreaks recorded this quarter. In one, 20 fawns died in a paddock with 100 calving hinds. They had been scouring before death and necropsy of one showed blood in the abomasum. In another outbreak, four fawns developed dysentery and died in a paddock with 90 calving hinds; one fawn necropsied had an ulcerated abomasum. Stress might play a role in the hinds through increased maternal excretion of cryptosporidia in faeces, and in calves through increased susceptibility to infection (abomasal ulceration is often associated with stress). Another contributing factor may have been contamination of the udder by faecal oocysts from muddy wallows or dirty pasture.

Six fawns died suddenly; most were well grown and about four to six weeks of age. Necropsy showed severe **white muscle disease** especially in the hind legs and along the muscle on the back. Histology confirmed a severe subacute myopathy, which was confirmed by low liver selenium concentrations (180 nmol/kg).

Horses

A six-year-old pony had had three bouts of unilateral nasal bleeding before it was found dead. At necropsy there were blood clots in the guttural pouches and a large amount of blood in the stomach indicating a massive bleed-out from the guttural pouch. Histology confirmed **guttural pouch mycosis**, with *Aspergillus*-like fungal hyphae in the granulomatous lining of the guttural pouch. *Aspergillus* was isolated on fungal culture.

Two horses fed a small quantity of commercial feed mix developed severe **colic**, taking about 12 hours to recover. The feed, which had been on the property about a month, had an odd smell and was contaminated with free-living oribatid mites. Fungal culture revealed a variety of fungal species, some of which may have had the ability to produce toxins. Spoilage may have begun even before harvest, as *Dreschlera* sp, a pathogen of barley, was isolated.

Pigs

Piglets were dying at two weeks of age, and two of three necropsies showed pericarditis. Histology revealed acute fibrinous pericarditis and interstitial pneumonia. The pericarditis suggested bacterial infection, possibly caused by *Pasteurella* or *Haemophilus* species and

occasionally *Streptococcus* species. The latter is often associated with iron deficiency anaemia in piglets. The fresh samples were not very fresh and culture proved negative. However, a haemogram on the one piglet remaining in the litter showed non-responsive microcytic hypochromic anaemia typical of **iron deficiency anaemia**.

Birds

Six **ostriches** developed diarrhoea and died soon after they were moved outside to paddocks. A number of dead sparrows in the area, and a *Salmonella* Brandenburg outbreak in ewes on a neighbouring farm, suggested salmonellosis. Necropsy showed haemorrhagic enteritis, and histology revealed severe acute enteritis consistent with salmonellosis. ***Salmonella* Typhimurium phage type 160** was isolated from enrichment, and this is the serotype associated with sparrow deaths. It appears to have been involved in the ostrich deaths.

Of 920 **ostrich** chicks born in the previous two months, more than 100 were euthanased because they had become unsteady on their legs and were losing weight, and many had diarrhoea, some with dysentery. They had been growing well until these signs appeared. Necropsies showed **enteritis** and, although intestinal cultures were negative, there were increased numbers of Gram-negative bacilli in smears. Histology of several birds revealed lesions of acute necrotising fibrinosuppurative typhlitis and proctitis caused by mixed bacteria including clostridia, possibly caused by a muddy environment and management stresses.

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Cattle

Infectious thrombotic meningoencephalitis, caused by ***Haemophilus somnus***, is a rare disease in cattle on pasture but is common in feedlot cattle in North America. It occurs sporadically in New Zealand feedlots and such a case was an 18-month-old feedlot steer that died suddenly. The animal also had vasculitis in the lung, and suppurative iritis.

A few cows in the Selwyn district of Canterbury have had **elevated GGT** levels; one acutely photosensitive cow had a level of 621 IU/l and another over 700 IU/l (reference range < 30). Such concentrations raise the suspicion of sporidesmin toxicity but this seems unlikely as the farms of origin are windswept and dry and the environmental conditions hardly suitable for *Pithomyces chartarum*. Both cases involved single animals with no clinical evidence of disease in herd mates. However, cows with high GGT levels, presumed to have resulted from sporidesmin toxicity, have been seen from Westport and Takaka recently.

Deer

The carcase of an aborted red deer calf (a rare occurrence) was autolysed and partially mummified but had chalky white streaking of much of the myocardium that was confirmed histologically as **myocardial necrosis** and mineralisation. Selenium analysis of the liver was difficult to interpret as the tissues were dry, which artificially increased the selenium levels.

Birds

A farm raising **pheasants** lost 20 six-week-old chicks in a two-day period. Two were necropsied and diarrhoea was noted in one. Histologically, there was severe **coccidial infestation** in the intestine.

Other species

Lesions typical of **rabbit haemorrhagic disease** (RHD) have been seen in several domestic rabbits in the South Canterbury area. The last case of RHD seen at this lab was a single case from Christchurch last year.

Blood smears were examined from a few wild Norwegian rats from the Canterbury area. Large numbers of **Trypanosomes**, presumed to be *Trypanosoma lewisi*, were seen in the blood of one. The blood parasite was recorded in 12% of rats in a survey of wild rats in the Waikato (*New Zealand Veterinary Journal* 28, 45-50, 1980).

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Cattle

There has been an increase in the number of lesions submitted from meat works as suspected **Cysticercus bovis**. Lesions in myocardium, masseter muscle and tongue were examined. Many contained degenerate or viable cestodes, in most cases considered most likely to be *Taenia saginata*. In others, no parasite remains were detected; other lesions diagnosed included actinobacillosis, actinomycosis or peripheral nerve sheath (schwannoma).

Evidence of **facial eczema** has come later than usual this season, starting at the end of February. Markedly increased GGT and GLDH concentrations were seen in two Jersey x Friesian cows in Hawera. Another case from Hawera revealed high GGT and GLDH concentrations in Friesian cattle with udder photosensitivity, that had been treated with zinc. In a similar case from Levin, two- to three-year-old Friesian cattle showing signs of udder photosensitivity, scouring and seeking shade, had elevated enzyme levels and had also been treated with zinc.

Ill thrift and diarrhoea in young cattle is an ongoing problem over summer and autumn. Causes have included gastrointestinal parasitism, BVD mucosal disease, yersiniosis and salmonellosis, especially *Salmonella* Typhimurium.

Neospora caninum remains the most commonly diagnosed cause of

bovine **abortion** in Northland, and there have also been several cases of *Leptospira pomona* abortion this season in unvaccinated herds.

Sporadic bovine lymphoma was diagnosed in two cows and a calf. Smears for cytology from a three-year-old cow with numerous skin masses contained numerous medium to large blast cells resembling lymphoblasts. The cow was EBL negative, making this a rare cutaneous form of sporadic bovine lymphosarcoma. Large numbers of blast cells in a six-month-old female Friesian calf were most likely a case of bovine sporadic lymphosarcoma and leukaemia. Serology for EBL was not performed; EBL is mostly seen in older cattle. Blood from a one-year-old Friesian cow with enlarged mandibular lymph nodes, swollen hard ventral neck, and a purulent ocular and nasal discharge, showed evidence of leukaemia, most likely sporadic bovine lymphosarcoma. The swollen neck may indicate the thymic form of lymphosarcoma.

Sheep

In two separate outbreaks, six- to eight-month-old lambs developed **nervous signs** with trembling and convulsions. Histologically, the myocarditis, nephritis and meningoencephalitis were suggestive of *Histophilus/Haemophilus* (HH) infection. *Actinomyces pyogenes* and *E coli* were cultured from one lamb, and Gram-positive organisms were visible in the other, ruling out Gram-negative HH as the cause.

Salmonella Hindmarsh has been cultured from faecal contents from cases of individual and group losses of ewes.

Horses

Ragwort toxicity was suspected in an 18-year-old pony that had been losing weight over four months. Serum biochemistry revealed a moderate increase in the serum GGT concentration, moderate increase in the serum GLDH concentration, marginal hypoalbuminaemia, hyperglobulinaemia and low serum urea concentration. These changes suggest chronic hepatobiliary disease with decreased hepatic function and **ragwort toxicity** a possible cause.

Smears of nasal discharge from an eight-year-old thoroughbred gelding with a chronic nasal discharge showed nucleated cells, which included degenerate neutrophils and epithelial cells, and many bacteria, occasionally intracellular. There were also small but significant numbers of branching fungal hyphae, indicating a **fungal rhinitis**.

Dogs

A seven-year-old male huntaway dog was presented to a veterinary clinic in the Hawke's Bay with dehydration, anorexia, depression, jaundice and an enlarged liver. It had been ill for four days. There was an acute inflammatory leukogram. Serum biochemistry revealed a severe cholestatic hepatopathy and possible nephritis. The titre to *Leptospira copenhageni* was greater than 1:1600, which is high and confirmed **leptospirosis**.

A Boxer bitch between 40 and 60 days of pregnancy developed an acute onset, brown watery discharge before aborting three pups. At necropsy the pups were moderately autolysed. Culture of liver from one pup grew a pure growth of *Listeria monocytogenes*. **Listerial abortion** occurs in other species and has previously been suspected as a cause of canine abortion.

Cats

Lead poisoning was diagnosed in two cats from different homes, both of which were old villas whose owners were removing old paint in the course of renovation. Both cats had a history of inappetence. Lead levels were 3.6 mg/l and 1.9 mg/l (normal <0.2). A Labrador dog in the first household had lead level of 4.0 mg/l (normal <0.5) and the owner 4.1 mg/l. The owner of the second cat had blood lead level of 2.3 mg/l but another cat in the household had a level of < 0.1 mg/l.

Birds

Two two-month-old **turkey** poults had bilateral nasal discharge and swelling of the nasal sinuses. One bird was euthanased. Culture of the sinus grew a moderate growth of a *Haemophilus* species. *Haemophilus gallinarum* and *paragallinarum* are the cause of **infectious coryza**, an acute respiratory disease of poultry characterised by nasal discharge, sneezing and swelling of the face under the eyes.

Two **ostriches** died at about two months of age. One carcase had no fat reserves and in the other there was serous atrophy of fat reserves. The bones of one bird were fragile and the blood was watery. The gizzards of both birds were markedly distended and contained a large amount of grass, some sand, a few small pebbles and wood chips in one. The intestines contained a small amount of inspissated ingesta. **Impaction of the proventriculus and gizzard** is related to ingestion of green fibre of excessive length, disturbed behaviour leading to ingestion of inappropriate fibre and the lack of insoluble stones of adequate size and number in the gizzard.

Fish

Two clinically healthy platys (*Xiphophorus maculatus*) from an aquarium where mycobacteriosis had been identified, were euthanased and submitted for surveillance purposes. One had no significant lesions. The other had numerous granulomas containing abundant acid-fast bacilli in the liver, kidney, gills and intestines. **Mycobacteriosis** is a chronic progressive disease in fish and takes years to develop into a clinical illness. Clinical manifestations include lethargy, anorexia, fin and scale loss and skin ulceration, exophthalmia, emaciation, coelomitis and development of nodules. Liver, kidney, heart and spleen are common sites for granulomas. *Mycobacterium marinum*, *M fortuitum* and *M piscium* are the main isolates. *Mycobacterium marinum* was previously isolated from fish in this tank. No microbiology was attempted on this occasion.

Photobacterium damsela was isolated from subcutaneous tissues from several fish in a saltwater aquarium. The fish showed signs of

lethargy, anorexia and disorientation. At postmortem the main lesion was severe multifocal ulceration of the face, especially around the lips. Microscopically the skin was extensively ulcerated. *Photobacterium damsela* (previously *Vibrio damsela*, reclassified in 2000) is a marine organism that is part of the normal microflora of healthy carcharhinid sharks. It is associated with disease in a number of marine animals: wound infections in dolphins, infection in leatherback turtles, several fish species and sharks (both captive and wild). It has also caused rare wound and fatal infections in humans.

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Cattle

Postmortem examination of a dairy cow that died suddenly showed a 20 cm raised, darkly discoloured, region in the liver. The kidneys were dark and mushy in texture. Histology demonstrated a large region of acute hepatic necrosis, flooded by haemorrhage. Sinusoids in this area contained large numbers of spore forming bacilli, which were not visible in the viable regions of the liver. The kidneys had a severe haemoglobinuric nephrosis. A *Clostridium* species was cultured from the liver lesion. Fluorescent antibody testing (FAT) was negative for *Clostridium septicum*, *C sordellii*, and *C chauvoei*. Gross, histological, and bacteriological findings were consistent with **bacillary haemoglobinuria**, which is caused by *C haemolyticum*. FAT testing for *C haemolyticum* is not available.

Sheep

Following extended yarding and subsequent shearing, six-month-old lambs were released to graze Caucasian clover. Within eight hours more than 100 lambs were dead. Clinical signs in surviving lambs included weakness, ataxia, tremors and tachycardia. Petechial myocardial haemorrhage and meningeal congestion were the main postmortem findings. Analysis of rumen contents revealed the presence of cyanide, confirming **cyanide toxicity**.

Goats

Six mature Angora goats in a herd of 80 had moderately large (1.0 to 2.5 cm diameter) firm dark spheroidal masses on the ears. Histological examination of excised lesions revealed features diagnostic of **malignant melanoma**. Solar induction is regarded as the cause of malignant melanomas on the dorsal surface of the ear and, less commonly, the perineum of Angora goats. Their potential as a model for the human disease has been considered.

Two skin biopsies were submitted from a group of goats suffering outbreaks of pox-like lesions on the teats and udder. The lesions appeared to recover and then relapse, with several weeks between breakouts, which coincided with a decrease in milk production. Histologically, the lesions were focal eosinophilic collagenolytic ulcerative dermatitis, consistent with **ectoparasitism or insect bite hypersensitivity**.

Dogs

Two of a group of five young male farm dogs died suddenly two days apart. The second to die was comatose, dehydrated, and had muscle spasms prior to death. Necropsy showed a greatly enlarged liver and jaundice, and histology revealed a lipidotic liver. All the dogs had been fed a diet that consisted exclusively of large pieces of uncooked fat for the past week. Cause of death may have been **metabolic ketoacidosis**. No further deaths occurred after modification of the diet.

An unvaccinated nine-week-old pup that developed jaundice and pyrexia (temperature reaching 41°C) deteriorated and died. Serology was negative for leptospirosis. The most significant histological changes were hepatocellular degeneration, necrosis and large intranuclear viral inclusion bodies in the liver. Inclusion bodies were also evident in the kidney within glomerular endothelial and tubular epithelial cells. The findings confirmed **infectious canine hepatitis**. Although now a rare disease, this case highlights the need for continued vaccination.

A three-year-old cross-bred bitch suspected of having had access to poison was presented vomiting. Blood samples revealed high levels of creatinine (171 mmol/l, reference range 43-117), urea (14.2 mmol/l, reference range 2.6-10.2), calcium (3.37 mmol/l, reference range 2.20-3.00); and prolonged prothrombin time (>180sec, reference range 7-14). The combination of a markedly extended prothrombin time and hypercalcaemia in conjunction with azotaemia suggested **poisoning with warfarin derivative/cholecalciferol** combination poison. A rodenticide containing 0.025% warfarin and 0.1% cholecalciferol has been available in New Zealand and stored product could still be around. Ingestion of this agent, either primarily or secondarily, could not be confirmed in this case. The combination of both toxins is postulated to increase the efficacy of each.

All four pups in a litter were unthrifty, developed tarry bowel motions and died despite intensive supportive and antibiotic therapy. Both *Salmonella Typhimurium* and *Campylobacter jejuni* were isolated from one pup at one of several sampling times.

Haematological examination of several pups revealed a non-regenerative microcystic and hypochromic anaemia, consistent with blood loss from chronic disease or iron deficiency, and an inflammatory leukogram. Necropsy of one pup revealed multisystemic lesions, suggestive of chronic antigenic stimulation and immunodepletion, and a mucoid colitis and intestinal bacterial overgrowth. No enteric pathogens were isolated from the intestine, probably because of the chronic nature of the lesions and prolonged antibiotic therapy. This case illustrates the difficulty of diagnosing enteric pathogens from one of a group of affected animals.

Cat

A cat being boarded in a cattery was presented to a veterinarian after being unwell for ten days. Haematology showed a degenerative left shift with marked toxic changes in the white cells. Despite treatment with antibiotics and fluid therapy, the cat died. Necropsy showed a florid fibrinonecrotic ulcerative enterocolitis, consistent with subacute **salmonellosis**. No causative organism was isolated, possibly because of the antibiotic treatment.

Birds

Several **dotterel** chicks in the Oputere region were found weak or dead and two were collected for necropsy. They showed emaciation, dehydration, fluid accumulation in the body cavities and a severe enteric parasitism. The parasites were identified as an **Acanthocephalan species** and are being further investigated.

Juvenile and adult breeding budgies developed respiratory dyspnoea and a high proportion died. Grossly the birds were in poor condition with generalised congestion and pulmonary consolidation. Histology revealed a multifocal necrogranulomatous pneumonia, hepatitis and splenitis with multiple bacterial emboli in these tissues and in the muscular layer of the gizzard. Culture of the liver yielded a pure heavy growth of *Yersinia pseudotuberculosis*.

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