

Disease Surveillance and Investigation Branch

DISEASE SURVEILLANCE REPORT

Northern Ireland Disease Surveillance Report, OCTOBER to DECEMBER 2013

- Otitis media associated with *Mycoplasma bovis* infection in calves
- Poisoning due to yew in calves
- Jaagsiekte in sheep
- Fasciolosis and copper toxicity in sheep

These are some of the matters discussed in the Northern Ireland animal disease surveillance quarterly report for October to December 2013

CATTLE:

Respiratory diseases

Respiratory disease was identified in 111 cattle post mortem submissions between October and December 2013. The most common pathogens identified included *Mycoplasma bovis* (thirty six cases), *Mannheimia haemolytica* (twenty five cases), *Pasteurella multocida* (sixteen cases), *Truperella pyogenes* (thirteen cases), parasitic husk (twelve cases) and *Haemophilus somnus* (eight cases).

Pneumonia and otitis media associated with *Mycoplasma bovis* infection

Pneumonia and otitis media associated with *Mycoplasma bovis* infection was diagnosed in two instances during the reporting period. In both cases there was a history of pneumonia, ill thrift and head tilt. At post-mortem, suppurative exudate was observed in the tympanic bulla with erosion of the surrounding temporal bone (Figure 1). Numerous abscesses were present in the lungs of one case and multiple consolidated foci were present in the other. Both cases were culture positive for *Mycoplasma bovis* from ear swabs and lung tissue, in one case there was an intercurrent infection with *T. pyogenes* and *P. multocida*.

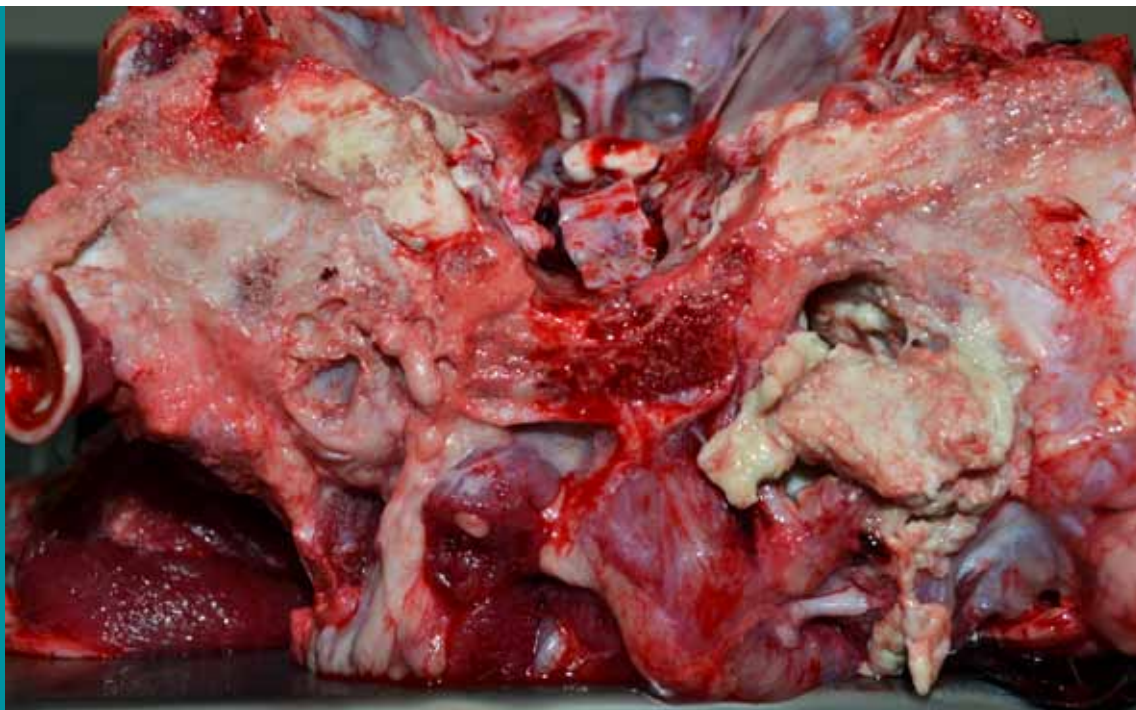


Figure 1

Otitis media
due to *M. bovis*
infection in a
calf

Pulmonary thrombo-embolism

Severe chronic frontal and maxillary sinusitis was diagnosed in a seven-year-old dairy cow that was submitted with a history of dullness and facial deformity. There was a large focal erosion of the left frontal bone and a purulent rhinitis was present. Lesions of vegetative endocarditis were detected on the right atrio-ventricular and pulmonary valves and there were multifocal suppurative foci within the lung consistent with pulmonary thrombo-embolism. *T. pyogenes* was recovered in profuse growth from the sinuses and heart valves.

Pulmonary thrombo-embolism with fatal haemorrhage was diagnosed in a ten-year-old cow with hepatic abscessation, thrombosis and phlebitis of the posterior vena cava. The cow had presented as a sudden death with epistaxis.

Parasitic pneumonia in housed calves

Parasitic pneumonia (*Dictyocaulus viviparus* infection) was diagnosed on full post mortem examination of three of a group of ten housed calves. Secondary infection with *M. haemolytica*, *Salmonella* Dublin and *Mycoplasma bovis* was identified. Appropriate advice on the control of lungworm infection prior to housing was given.

Pneumonia due to *M. bovis* and *T. pyogenes* infection was diagnosed in a group of calves which were also affected with enteritis due to *S. Dublin* infection. Uptake of maternally derived antibody (MDA) was shown to be inadequate by use of the zinc sulphate turbidity test (ZST).

Outbreaks of 'calf pneumonia'

Acute pneumonia due to *M. haemolytica* was diagnosed on full postmortem examination of a calf presented with a history of sudden death. Acute fibrinonecrotic bronchopneumonia was present and this case was considered typical of several seen during the month of November. Other outbreaks of pneumonia in calves during the reporting period involved *M. bovis* and bovine respiratory syncytial virus.

Alimentary diseases

BVD / Mucosal disease

Of 3683 blood samples that were tested for bovine viral diarrhoea virus (BVDV) by virus isolation or antigen capture ELISA 327 (8.9 per cent) were positive. In addition, 12 of 471 (2.6 per cent) submitted tissues and nasal mucus samples were positive by immunofluorescence. Six cases of mucosal disease were confirmed at post mortem examination during this period.

Two diagnoses of acute bovine virus diarrhoea infection and mucosal disease were made from animals submitted for post-mortem examination during the reporting period. In one case there was jaundice, haemoglobinuria and widespread petechial and ecchymotic haemorrhages in the carcass. BVDV viraemia was detected indicating either acute BVDV infection or persistent BVDV infection.

The second case presented with pneumonia and diarrhoea and histology showed coagulated fibrin and blood overlying the Payer's patches in the ileum. There was lymphocytosis and infiltration of the Payer's patches with leucocytes, there was vasculitis and destruction of the underlying submucosal glands. Fibrino-necrotic lobar pneumonia was present.

Yew tree poisoning

Yew tree (*Taxus buccata*) poisoning was diagnosed in a five-month-old calf submitted with a history of sudden death. At post-mortem examination a large number of yew leaves were found in the rumen.

Traumatic abomasal ulceration and haemorrhage

A four-year-old cow was submitted with a history of dullness and reluctance to rise. Gross postmortem examination showed the presence of two large full-depth abomasal ulcers with associated substantial haemorrhage. A piece of wire was embedded in the abomasal mucosa.

Neonatal enteritis

The pathogens identified in neonatal bovine faecal samples during the quarter are shown in Table 1. Overall, *Cryptosporidium* species and rotavirus were the most common pathogens identified.

TABLE 1: Pathogens identified in neonatal bovine faecal samples in Northern Ireland, October to December 2013

Pathogen	Number	
	Tested	Positive (per cent)
<i>Cryptosporidium</i> species	403	119 (29.5%)
Rotavirus	410	94 (22.9%)
Coronavirus	410	26 (6.3%)
<i>Escherichia coli</i> K99	183	6 (3.3%)

Other enteric conditions

Parasitic ova found in ruminant faeces samples submitted during the period are shown in Table 2.

Table 2: Endoparasitic infections in ruminants in Northern Ireland, October to December 2013

	Total	No of parasitic ova					% positive
		Negative	+	++	+++	++++	
Liver fluke							
Bovine	1448	1198	192	44	11	3	17.8%
Ovine	411	339	33	27	7	5	17.5%
Paramphistome							
Bovine	1444	790	221	299	82	52	45.3%
Ovine	411	346	34	25	3	3	15.8%
Coccidia							
Bovine	1604	1343	226	19	12	4	16.3%
Ovine	412	140	225	40	6	1	66.0%
Strongyle worm egg count							
	Total	<500 epg	≥500 epg			% Positive	
Bovine	1573	1495	78			4.9%	
Ovine	410	327	83			20.2%	

≥500 eggs per gram of faeces (epg) was considered of likely clinical significance
+ Low, ++ Moderate, +++ High, ++++ Very high

Johne's disease

Examination for *Mycobacterium avium* subspecies *paratuberculosis* (MAP) was carried out by microscopic examination, with Ziehl-Neelsen staining, on 302 bovine faecal samples. 9 samples (3.0 per cent) contained acid-fast organisms typical of MAP. Of 6710 bovine blood samples that were tested for antibodies to MAP 580 (8.6 per cent) were positive.

Reproductive and mammary diseases

Acute necrotising metritis associated with foetal maceration was diagnosed in an eight-year-old suckler cow presented with a history of recumbence following dullness and diarrhoea. Examination of the foetus found no infectious cause of abortion; *E.coli* was recovered from the dam in septicaemic distribution.

Abortion

Specimens from 109 bovine abortions and stillbirths were examined during the 4th quarter. Significant pathogens were detected in 62 cases (56.9 per cent). Of these, *S. Dublin* (18 cases, 16.5 per cent) was the most commonly identified pathogen. Other pathogens identified included *Neospora caninum* (12 cases, 11.0 per cent), *Leptospiral* species (11 cases, 10.1 per cent), *E. coli* (7 cases, 6.4 per cent), *T. pyogenes* (7 cases, 6.4 per cent) and *Bacillus licheniformis* (7 cases, 6.4 per cent).

Summary of bovine abortions 2013

Specimens from 492 bovine abortions and stillbirths were examined during 2013. Significant pathogens were detected in 241 cases (49.0 per cent) as shown in Figure 2. Of these, *N. caninum* (42 cases, 8.5 per cent) and *B. licheniformis* (42 cases, 8.5 per cent) were the most commonly identified pathogens. Other pathogens identified included *T. pyogenes* (37 cases, 7.5 per cent), *S. Dublin* (30 cases, 6.1 per cent), *E. coli* (29 cases, 5.9 per cent), *L. Hardjo* (28 cases, 5.7 per cent) and BVDV (20 cases, 4.1 per cent).

Bovine Abortion Pathogens

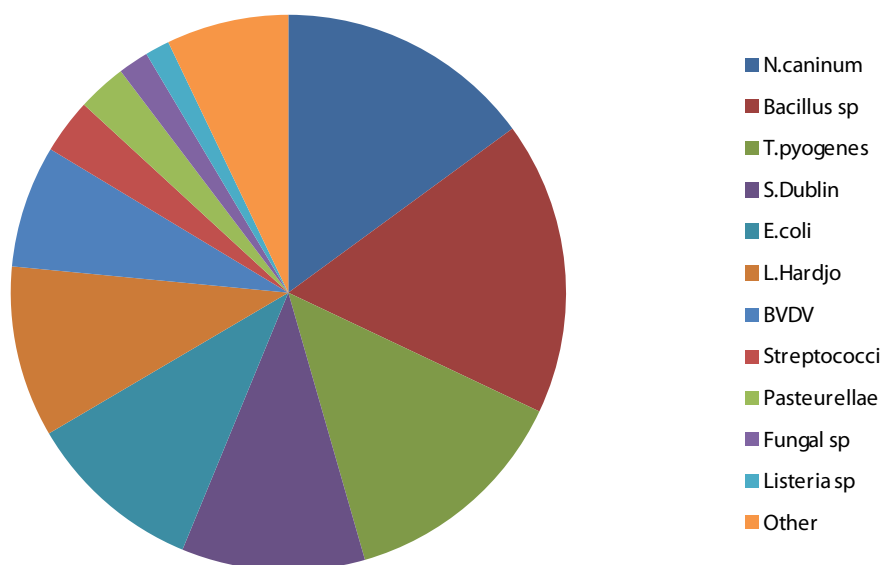


Figure 2

Summary of Bovine Abortions in Northern Ireland 2013.

Based on 241 bovine abortion cases in which significant pathogens were detected during the period January to December 2013

Mastitis

A total of 365 bacterial isolates were cultured from milk samples submitted from acute and chronic mastitis cases. 48 (13.2 per cent) samples yielded cultures of more than two organisms and were considered to be potentially contaminated. No bacteria were cultured in a further 48 samples. *E. coli* was the most frequently isolated organism and accounted for 23.6 per cent of isolates cultured. Other frequently identified organisms included *Streptococcus uberis* (10.7 per cent), *Staphylococcus aureus* (10.7 per cent) and *Streptococcus dysgalactiae* (3.8 per cent).

An eleven-year-old dairy cow was submitted with a history of sudden death. On gross examination; the right forequarter of the udder was markedly swollen and firm and no secretion was expressible, the stem of the right fore quarter contained foetid dark watery fluid. The right cranial lung lobe was black and firm while there were multiple dark meaty lobules scattered through all lung lobes. *M. haemolytica* was recovered from both the mammary gland and the lung.

Neurological diseases

Clostridium botulinum type D toxin was diagnosed in 2 cases during the 4th quarter of 2013. In neither case was there definite association with the spreading of broiler litter on pasture.

Other diseases of cattle

Renal amyloidosis in cows

A case of renal amyloidosis was diagnosed on full post mortem examination of a four-year-old cow with a history of ill thrift of one month's duration. On gross examination the kidneys were enlarged and yellow in colour. On histological examination, the glomerular tufts contained homogeneous, eosinophilic proteinaceous material, and there were interstitial peritubular medullary cuffs of the same homogenous eosinophilic substance. Within tubules there were large numbers of proteinaceous hyaline casts and there was attenuation of epithelium in affected tubules. There was multifocal cortical interstitial fibrosis. There was apple green birefringence of the homogeneous substance when viewed using polarised light. Similar lesions were seen in another four-year-old cow from a different herd, in this case polycystic kidneys were observed on gross examination.

Congenital malformation in a calf

A three-week-old calf was presented with a history of chronic dyspnoea. On post-mortem examination; the right atrium, auricle and ventricle were greatly enlarged. The heart appeared rounded, the foramen ovale was patent and the aorta branched off the pulmonary artery. The left ventricle was thickly muscled but the lumen was unapparent. A large nutmeg (heart failure) liver was present. A diagnosis of congenital heart defect including patent foramen ovale was made.

Urachal persistence and abscessation were diagnosed in a six-month-old calf found to have uroperitoneum on gross post-mortem examination. The abscess on the apex of the bladder was found to be patent to the bladder lumen. *T. pyogenes* was recovered from the urine.

SMALL RUMINANTS: SHEEP

Respiratory diseases

Respiratory disease was identified in 11 ovine post mortem submissions during this quarter. Jaagsiekte (five cases), *M. haemolytica* (four cases), parasitic pneumonia (one case) and laryngeal chondritis (one case) were the most common diagnoses.

Jaagsiekte and secondary pneumonia due to *M. haemolytica* was diagnosed on full post-mortem examination of two three-year-old ewes from an upland flock. Histological examination showed widespread replacement of alveolar cells by cuboidal and columnar cells, some of which formed papillary -like projections into the alveolar air spaces. There as an associated accumulation of foamy macrophages. There were leucocyte aggregates in the alveolar airspaces and some 'oat cells' were present with degenerating and streaming nuclei. Chronic fasciolosis was also present in this case.

Alimentary diseases

Fasciolosis

Several instances of fasciolosis were observed at gross post-mortem examination during the reporting period. Acute, sub-acute and chronic disease was detected and attention was drawn to the AFBI Liver Fluke forecast published in September 2013. In one instance, liver damage due to fluke may have caused a release of copper from the liver with resulting acute copper toxicity with haemolysis and jaundice in a one-year-old ram.

Johne's disease

16 ovine faecal samples were examined microscopically using Ziehl-Neelsen staining for MAP. One sample (6.2 per cent) contained acid-fast organisms typical of MAP. 345 ovine blood samples were tested for antibodies to MAP, 2 (0.6 per cent) were positive.

Reproductive diseases

Abortion

Specimens from 17 ovine abortions and stillbirths were examined during the 4th quarter. Significant pathogens were detected in 7 cases (41.2 per cent). Pathogens identified included *S. Dublin* (3 cases, 17.6 per cent), toxoplasmosis (2 cases, 11.8 per cent), *Chlamydophila abortus* (1 case, 5.9 per cent), *E. coli* (1 case, 5.9 per cent) and leptospirosis (1 case, 5.9 per cent).

Summary of ovine abortions 2013

Specimens from 331 ovine abortions and stillbirths were examined during 2013. Significant pathogens were detected in 209 cases (63.1 per cent) as shown in Figure 3. Pathogens identified included *Toxoplasma gondii* (66 cases, 19.9 per cent), *C. abortus* (51 cases, 15.4 per cent), *E. coli* (24 cases, 7.3 per cent) leptospirosis (22 cases, 6.6 per cent), campylobacteriosis (18 cases, 5.4 per cent) and *B. licheniformis* (11 cases, 3.3 per cent).

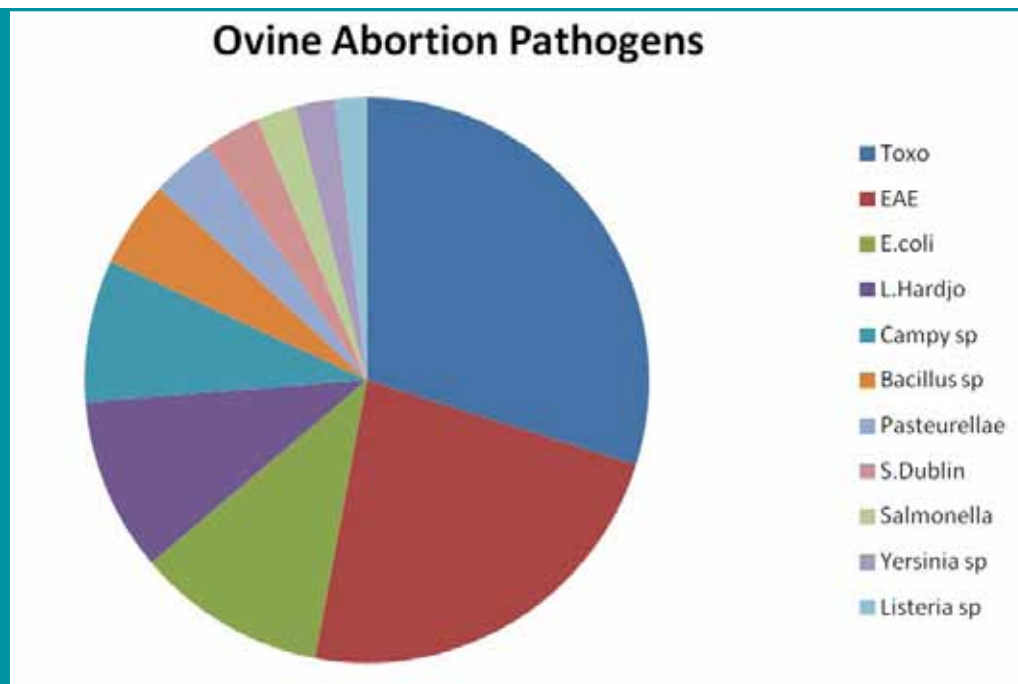


Figure 3

Summary of Ovine Abortions in Northern Ireland 2013.

Based on 209 ovine abortion cases in which significant pathogens were detected during the period January to December 2013

Neurological diseases

No cases of listeriosis were confirmed by post mortem examination during the 4th quarter of 2013.

Skin diseases

Eight cases were examined for sheep scab during the 4th quarter of 2013, two of which were positive.

Other diseases

Septicaemic pasteurellosis due to *Bibersteinia trehalosi* infection was diagnosed in several cases during the reporting period. Parasitic gastroenteritis was identified as a probable pre-disposing cause in some cases.

HORSES:

26 swabs were examined for the presence of *Tayorella equigenitalis* during this quarter, all of which were negative. 19 swabs were cultured from horses with a history suggestive of strangles during this quarter, 2 of which were positive

PIGS;

Intra-abdominal haemorrhage associated with mesenteric tearing was diagnosed as the cause of death in a seven-week-old growing pig submitted as a case of sudden death. There had been no other losses in the group.

BIRDS: Poultry

Pneumonia and air-sacculitis due to *P. multocida* infection was diagnosed on full post-mortem examination of two sixteen-week-old turkeys from a housed group of 150.

WILDLIFE and EXOTICS:**Diaphragmatic rupture in a wallaby**

A five-year-old wallaby from a zoological collection was submitted with a history of dyspnoea. On gross examination; there was a diaphragmatic rupture present with herniation of the caecum, distal ileum and proximal colon into the thoracic cavity. The rupture was approximately 3cm in diameter, with thickened edges and some haemorrhage was present on the right side of the diaphragm. A diagnosis of diaphragmatic rupture, herniation and intestinal necrosis was made.

Splenomegaly and intestinal haemorrhage in a farmed deer

A case of splenomegaly and intestinal haemorrhage associated with sudden death was diagnosed in four-month-old farmed deer. The small intestine contents were positive for the presence of *Clostridium perfringens* alpha toxin by ELISA. It was noted that infection with *Cl. perfringens* type A has been associated with this syndrome in deer but the aetiology of the condition is not fully clear.