Agri-Food and Biosciences Institute ®

Northern Ireland
Disease Surveillance Report

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Disease Surveillance and Investigation Branch

Northern Ireland Disease Surveillance Report, 1 October to 31 December 2011

- Bovine abortion due to opportunistic infection with *Campylobacter jejuni*
- Lymphoplasmacytic enteritis in a cow
- Malignant catarrhal fever in a heifer
- Fasciolosis in sheep
- *Ascaris suum* infection in pigs

These are some of the matters discussed in the Northern Ireland animal disease surveillance quarterly report for 1 October to 31 December 2011.

CATTLE:

Respiratory diseases

Respiratory disease was identified in 103 cattle postmortem submissions between October and December 2011. The most common pathogens identified included: *Pasteurella multocida* (23 cases), *Mycoplasma bovis* (20 cases), *Mannheimia haemolytica* (18 cases), *Histophilus somni* (11 cases), *Trueperella* (previously *Arcanobacterium*) *pyogenes* (10 cases) and parasitic husk (seven cases).

M. bovis antigen was detected in three one-year-old calves which died from necrosuppurative bronchopneumonia. The calves were housed indoors on grass and silage.

Alimentary diseases: BVD/Mucosal disease

Of 6023 blood samples that were tested for bovine viral diarrhoea virus (BVDV) by virus isolation or antigen capture ELISA 458 (7.6 per cent) were positive. In addition, 25 of 379 (6.6 per cent) submitted tissues and nasal mucus samples were positive by immunofluorescence. Five cases of mucosal disease were confirmed at postmortem examination during this period.

Lymphoplasmacytic enteritis in a cow

Lymphoplasmacytic and eosinophilic enteritis and typhlitis were diagnosed in a five-year-old cow submitted for necropsy with a history of colic, abdominal swelling, rectal prolapse and recumbency. These unusual lesions were both severe and diffuse in this animal. An exact aetiology has not been determined. Similar lesions are reported in the literature associated with parasitic infection or in cases of idiopathic inflammatory bowel disease in other species.

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 2011

	Number	
Pathogen	**Tested**	**Positive (%)**
Cryptosporidium species	145	32 (22.1%)
Rotavirus	464	161 (34.7%)
Coronavirus	472	42 (8.9%)
Escherichia coli K99	211	17 (8.1%)

TABLE 2: Endoparasitic infections in ruminants in Northern Ireland, October to December 2011

	No of parasitic ova						
	Total	**Negative**	**+**	**++**	**+++**	**++++**	**% positive**
Liver fluke							
Bovine	958	881	65	12	0	0	8.0%
Ovine	232	207	9	7	4	5	10.8%
Paramphistome							
Bovine	957	703	135	94	18	7	26.5%
Ovine	233	203	22	8	0	0	12.9%
Coccidia							
Bovine	1114	915	159	25	11	4	17.9%
Ovine	249	59	153	20	11	6	76.3%
Strongyle worm egg count		**<500 epg**	**≥500 epg**				
Bovine	1073	125	48				4.5%
Ovine	242	75	49				51.2%

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

Other enteric conditions

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

Johne's disease

Examination for *Mycobacterium avium* subspecies *paratuberculosis* (MAP) was carried out by microscopic examination, with Ziehl-Neelsen staining, on 301 bovine faecal samples. 23 samples (7.6 per cent) contained acid-fast organisms typical of MAP. Of 6295 bovine blood samples that were tested for antibodies to MAP 402 (6.4 per cent) were positive.

Reproduction and mammary disease

Abortion

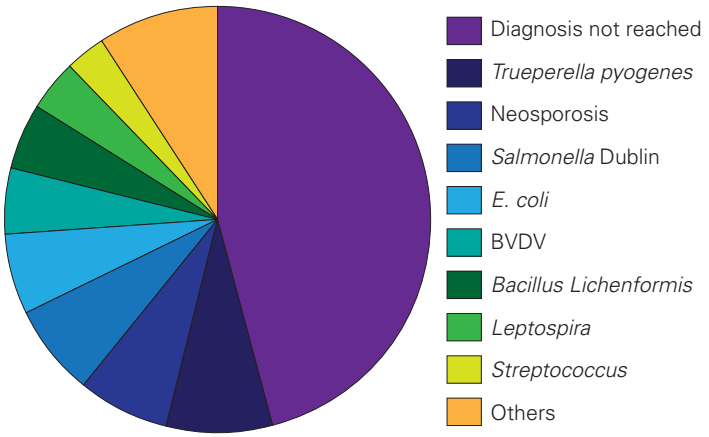
Specimens from 150 bovine abortions and stillbirths were examined during the quarter. Significant pathogens were detected in 84 cases (56.0 per cent). Of these, *Salmonella* Dublin (17 cases, 11.3%) was the most commonly identified pathogen.
Other pathogens identified included:
Neospora caninum (16 cases, 10.7 per cent),
T. pyogenes (13 cases, 8.7 per cent),
E. coli (nine cases, 6.0 per cent),
Bacillus licheniformis (six cases, 4.0 per cent),
BVDV (six cases, 4.0 per cent) and
Leptospira Hardjo (six cases, 4.0 per cent).

In one instance abortion due to *Leptospira* Hardjo infection was diagnosed in a stillborn calf with a foetal fluid MAT antibody titre of 1/1000. No antigen could be detected by immunohistochemistry on kidney or adrenal tissue.

Abortion due to opportunistic infection with *Campylobacter jejuni* was diagnosed in a foetus from a heifer. A profuse pure growth of *C.jejuni* was recovered from the foetal stomach contents. It was noted that this organism is a rare cause of abortion in cattle following oral transmission.

A summary of the main causes of bovine abortion in Northern Ireland during 2011 is given in Figure 1.

Figure 1. Causes of bovine abortion in Northern Ireland during 2011



Mammary disease

Mastitis

A total of 1100 bacterial isolates were cultured from milk samples submitted from acute and chronic mastitis cases. 155 (14.1per cent) samples yielded cultures of more than two organisms and were considered to be potentially contaminated.

No bacteria were cultured in a further 80 samples. *E. coli* was the most frequently isolated organism and accounted for 17.2 per cent of isolates cultured. Other frequently identified organisms included:
Streptococcus uberis (13.7 per cent),
B. licheniformis (8.5 per cent), and
Staphylococcus aureus (6.5 per cent),
Streptococcus species (6.5 per cent),
Corynebacterium bovis (5.9 per cent),
Aerococcus species (5.6 per cent) and
Streptococcus dysgalactiae (3.8 per cent).

Death due to haemorrhage following a skin wound to the engorged udder was diagnosed in a four-year-old cow which died suddenly one day after calving.

Neurological disease

Clostridium botulinum type D toxin was diagnosed in four cases during the 4th quarter of 2011.

Bovine Neonatal Pancytopaenia

A total of six cases of bovine neonatal pancytopaenia (BNP) were diagnosed during the reporting period. In one case it was noted that haemorrhage was largely confined to the jejunum but bone marrow histology was typical of BNP.

Urinary tract disease

Severe pylonephritis, chronic lymphoplasmacytic and fibrosing interstitial nephritis, ulcerative and haemorrhagic cystitis and vulvovaginitis were diagnosed in a three-year-old cow. Bovine herpes virus (BHV-1 and BHV-4) was not isolated and *E. coli* was recovered from the kidney and bladder.

Other diseases

Malignant catarrhal fever

A one-year-old heifer was submitted for necropsy in November with a history of ill thrift for several months, progressing to blindness. Gross examination was unremarkable save for a single, shallow ulcer on the abomasal mucosa. Histology of brain tissue revealed extensive non-suppurative meningoencephalitis. There was vasculitis of the meningeal and cerebral blood vessels with adventitial and perivascular lymphocytic infiltrate. The diagnosis was made on the basis of the brain lesions and a blood sample taken one week prior to submission which tested positive for antibodies to malignant catarrhal fever.

SMALL RUMINANTS: SHEEP

Respiratory diseases

Respiratory disease was identified in 22 ovine postmortem submissions during this quarter. Jaagsiekte (five cases), *M. haemolytica* (four cases), laryngeal chondritis (four cases) and *P. multocida* (one case) were the most common diagnoses.

Atypical pneumonia was diagnosed in a six-month-old lamb which was included in a recently purchased batch of four hundred. The vaccination history was uncertain.

Alimentary diseases

Johne's disease

Four ovine faecal samples were examined microscopically using Ziehl-Neelsen staining for MAP. No samples contained acid-fast organisms typical of MAP. Five ovine blood samples were tested for antibodies to MAP, 2 (40 per cent) of which were positive.

Fasciolosis

Four cases of fasciolosis were diagnosed during the reporting period on the basis of necropsy, histology and parasitology. One case, in a six-year-old ewe was sub-acute. The other cases, also in ewes, were all of chronic disease (Figure 2). In one instance inefficiency of triclabendazole treatment was suspected but no further tests were carried out to investigate.

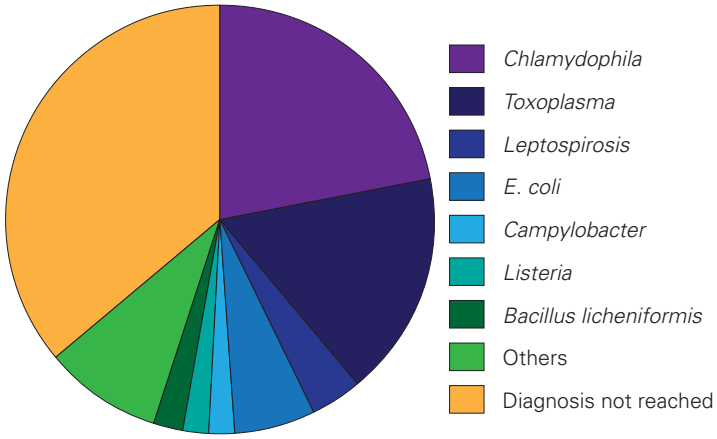
Figure 2: Fasciola hepatica from the bile ducts of a sheep liver (Photo. Cliff Mason, AFBI-VSD Photo Unit)

Reproductive diseases

Specimens from 16 ovine abortions and stillbirths were examined during the 4th quarter. Significant pathogens were detected in six cases (37.5 per cent). Pathogens identified included:
Chlamydophila (one case, 6.3%),
Toxoplasma gondii (one case, 6.3%),
E. coli (one case, 6.3 per cent),
Campylobacter (one case, 6.3 per cent),
B.licheniformis (1 case, 6.3%) and
Listeria monocytogenes (one case, 6.3 per cent).

A summary of the most important causes of sheep abortion in Northern Ireland during 2011 is given in Figure 3.

Figure 3. Causes of ovine abortion in Northern Ireland during 2011



Neurological diseases

No cases of listerial encephalitis were confirmed by postmortem examination during the 4th quarter of 2011.

Skin diseases

No cases of sheep scab were confirmed during the 4th quarter of 2011.

SMALL RUMINANTS: GOATS

Alimentary diseases

Enteritis in a goatling

A four-month-old goatling was submitted for necropsy following a clinical presentation of diarrhoea. Enteritis was confirmed on gross examination and histologically superficial mucosal necrosis and acute inflammation associated with bacterial colonies was detected. Examination of the mesenteric lymph node showed foci of necrosis and lymphadenitis surrounding bacterial colonies. *Bibersteinia trehalosi* was recovered from cultures of the mesenteric lymph node.

HORSES:

Twenty six swabs were examined for the presence of *Tayorella equigenitalis* during this quarter, all of which were negative. Eight swabs were cultured from horses with a history suggestive of strangles, one of which was positive.

Alimentary diseases

Parasitic disease

Cyathostomosis and intussusception of the caecum were diagnosed on necropsy of an eighteen-month-old gelding. Large numbers of cyathostomes were seen in the caecum with some encysted in the lining.

PIGS:

Alimentary diseases

Parasitic disease

A three-month-old growing pig was submitted with a history of sudden death. Necropsy showed intestinal torsion and 'milk spot' liver with the presence of myriad ascarid worms in the intestine. *Ascaris suum* infection was diagnosed and it was noted that the eggs of this parasite are resistant to chemical decontamination. It was considered probable that the environment was heavily contaminated and that cohort animals were likely to be infected.

BIRDS: Poultry

Histomonosis was diagnosed in a growing turkey, which was the fourth bird to die from a group of 30. Histological examination of the liver showed extensive foci of hepatic necrosis infiltrated by lymphocytes and multinucleated giant cells. Numerous trophozoites of *Histomonas meleagridis* were present throughout the lesions.

MISCELLANEOUS: DEER

Alimentary diseases

An occurrence of sudden death in recently housed red deer was investigated. Deaths occurred around three weeks after housing and at necropsy hepatic necrosis and haemorrhagic enteritis were detected. *Clostridium sordellii* was detected in the liver by immunofluorescence and this organism was considered to be the cause of the hepatic necrosis. It is likely that the organism originated from an ascending infection from the alimentary tract. It was noted that overgrowth of Clostridial species in the intestines is associated with change of diet and stress in deer.

This summary has been compiled by the Veterinary Sciences Division of the Agri-Food and Biosciences Institute (AFBI*) of Northern Ireland and is based on diagnostic submissions to AFBI's veterinary laboratories at Stormont, Belfast, and Omagh, Co Tyrone.
http://www.afbini.gov.uk/index/services/diagnostic/adds.htm
*AFBI was created on 1st April 2006 as the amalgamation of DARD Science Service and the Agricultural Research Institute of Northern Ireland. AFBI operates a farm animal disease diagnostic service on behalf of the Department of Agriculture and Rural Development for Northern Ireland.