

Disease Surveillance and Investigation Branch

DISEASE SURVEILLANCE REPORT

Northern Ireland Disease Surveillance Report, JULY to SEPTEMBER 2013

- Lungworm in calves
- Lymphoma in a cow
- Larval parafistomosis in ewes
- Ovine Pulmonary adenocarcinoma in a ewe
- Avian polyoma virus in an Amazon parrot

These are some of the matters discussed in the Northern Ireland animal disease surveillance quarterly report for July to September 2013.

CATTLE:

Respiratory diseases

Respiratory disease was identified in 52 cattle post mortem submissions between July and September 2013. The most common pathogens identified included Parasitic Husk (sixteen cases), *Mycoplasma bovis* (nine cases), *Pasteurella multocida* (three cases), *Haemophilus somnus* (two cases) and *Mannheimia haemolytica* (two cases).

Parasitic pneumonia was diagnosed in several cases during the period with submissions beginning in July. Age of animals presented for post mortem examination ranged from six months to two-years old. In one case the husk was complicated by a secondary infection with *Pasteurella multocida* and in another *Salmonella* Dublin was recovered from the lungs of a six-month-old heifer affected with husk. Overall during the third quarter of the year, 248 bovine faeces samples were tested for the presence of *Dictyocaulus viviparus* larvae, of these 28 (11.0 per cent) were positive. When negative results were found, the veterinary practitioners involved were cautioned about the importance of pre-patent infection in outbreaks of lungworm disease.

Necrotising bronchopneumonia and pulmonary abscessation due to combined IBR, *Trueperella pyogenes* and *Mycoplasma bovis* infection was diagnosed by gross post mortem and histology in a twelve-month-old bullock submitted from a herd undergoing an outbreak of pneumonia. It was noted that in this case, immunofluorescence testing (FAT) for the presence of IBR was negative. This was possibly due to the animal examined being in the post viraemic stage of the infection.

Pneumonia due to *Actinobacillus* infection

A seven-year-old bull with a history of respiratory distress died and was submitted for post mortem examination.

On gross examination; severe septal emphysema and patchy consolidation was seen throughout the caudo-ventral and caudo-dorsal lung lobes and there were multiple pale, firm nodules,

<0.5mm diameter throughout the pulmonary parenchyma. Histological examination of the lungs showed the presence of pyo-granulomatous lesions surrounding branching, radiating, eosinophilic colonies with morphology typical of *Actinobaccillus lignieresii*. Periodic- Acid- Schiff (PAS) stained sections were negative for the presence of fungal hyphae and a diagnosis of pneumonia due to *A. lignieresii* infection was made.

Acute bovine respiratory distress syndrome

Bronchiolitis obliterans with hyalinisation, epithelialisation, bronchiolar smooth muscle hyperplasia and hypertrophy with petechiation were seen on histological examination of lung tissue submitted from a two-year-old bull which died in acute respiratory distress. The histology was considered to be consistent with acute bovine respiratory distress syndrome. It was noted that this condition occurs in cattle of two-years-old and over and is commonly referred to as 'Fog Fever'.

Laryngeal obstruction in a dairy cow

A five-year-old dairy cow was submitted with a history of sudden death post calving and immediately following the administration of a high calcium bolus. At post mortem examination there was a dissolving bolus of white chalky material obstructing the Larynx (Figure 1) and a diagnosis of death due to laryngeal obstruction by the high calcium content bolus was made.

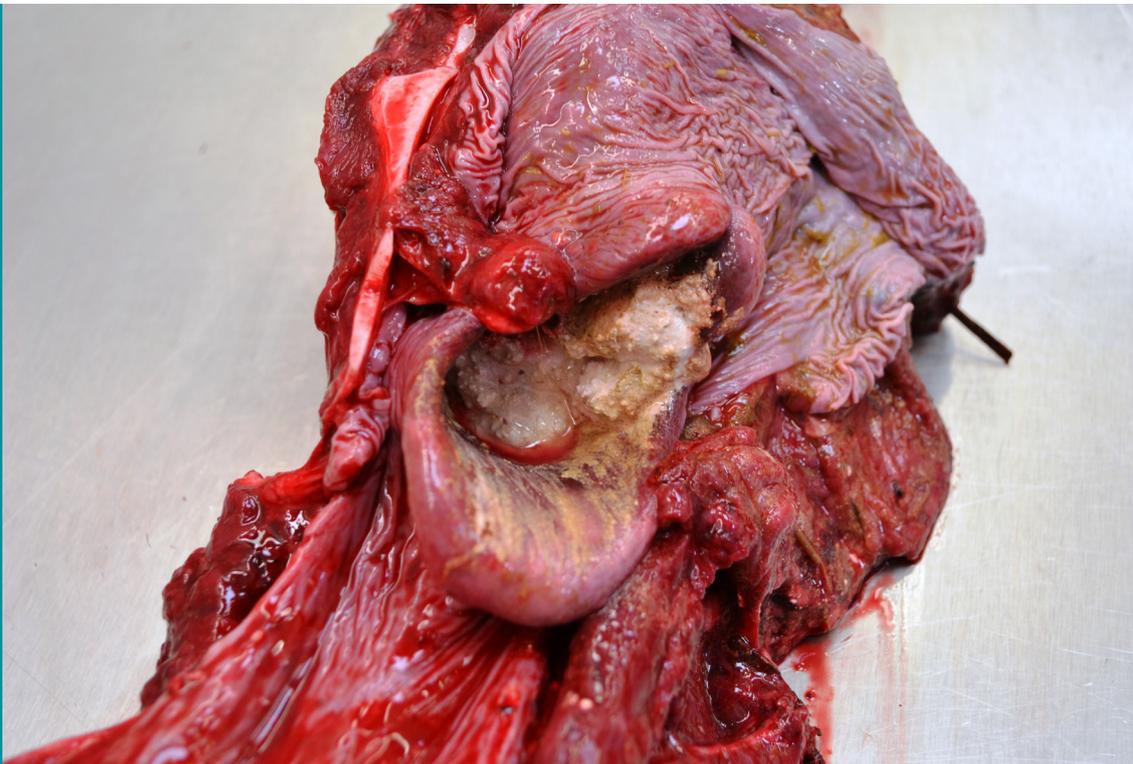


Figure 1

Dissolving high calcium bolus in the larynx of a dairy cow.

Alimentary diseases

Of 2294 blood samples that were tested for bovine viral diarrhoea virus (BVDV) by virus isolation or antigen capture ELISA 223 (9.7 per cent) were positive. In addition, 5 of 308 (1.6 per cent) submitted tissues and nasal mucus samples were positive by immunofluorescence. Seven cases of mucosal disease were confirmed at post mortem examination during this period.

Right displaced abomasum (RDA) and abomasal volvulus (AV)

A seven-year-old dairy cow was submitted with a history of ill thrift followed by sudden death. On post mortem examination right displacement (RDA) lateral to the liver and rotation of the abomasum on its mesenteric axis was seen. It was noted that abomasal volvulus (AV) can develop slowly from an uncorrected RDA and that this was the case in this instance.

Pyrrolizidine alkaloid poisoning due to ingestion of ragwort (*Senecio jacobaea*) was diagnosed in a twenty-seven-month-old bullock and a fifteen-month-old bullock submitted from different farms for post mortem examination. In both cases, histological examination of the liver showed generalised fibrosis, particularly in the sinusoids. The hepatoparenchymal cells varied greatly in size and shape, and numerous megalocytes were present. In both instances the animals submitted were part of a much larger affected group. It was noted that these cases continued the trend of high numbers of ragwort poisoning cases seen in the previous quarter of the year.

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, July to September 2013

Pathogen	Number	
	Tested	Positive (per cent)
<i>Cryptosporidium</i> species	159	44 (27.7%)
Rotavirus	153	27 (17.6%)
Coronavirus	152	4 (2.6%)
<i>Escherichia coli</i> K99	56	4 (7.1%)

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, July to September 2013

	Total	No of parasitic ova					% positive
		Negative	+	++	+++	++++	
Liver fluke							
Bovine	1113	982	112	15	4	0	11.8%
Ovine	451	386	33	23	7	2	14.4%
Paramphistome							
Bovine	1116	681	173	192	56	14	38.9%
Ovine	450	324	53	58	12	3	28.0%
Coccidia							
Bovine	1221	957	202	38	12	12	21.6%
Ovine	490	203	201	53	21	12	58.6%
Strongyle worm egg count							
	Total	<500 epg	≥500 epg				% Positive
Bovine	1208	1106	102				8.4%
Ovine	485	398	87				17.9%

≥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 200 bovine faecal samples. 8 samples (4.0 per cent) contained acid-fast organisms typical of MAP. Of 3050 bovine blood samples that were tested for antibodies to MAP 279 (9.1 per cent) were positive.

Reproductive and mammary diseases

Abortion

Specimens from 96 bovine abortions and stillbirths were examined during the 3rd quarter. Significant pathogens were detected in 41 cases (42.7 per cent). Of these, *Neospora caninum* (11 cases, 11.5 per cent) was the most commonly identified pathogen. Other pathogens identified included *Salmonella* Dublin (8 cases, 8.3 per cent), *Leptospira* Hardjo (5 cases, 5.2 per cent), *E.coli* (4 cases, 4.2 per cent), BVDV (3 cases, 3.1 per cent) and *Streptococcus* spp (3 cases, 3.1 per cent).

Streptococcus pluranimalium was diagnosed as the cause of abortion in a late gestation foetus. The organism was recovered in heavy pure growth from the foetal stomach contents.

Schistosomus reflexus was diagnosed in a calf delivered by caesarean section. There was non-fusion of skin of the ventral thorax and abdomen. The lumbar spine was arched dorsally and cranially such that the hindlimbs were projected above and extending in front of the head. There was fibrosis of the liver. The ribcage on both sides folded back dorsally on itself such that there was no fusion at the sternum and the heart and lungs were situated beneath the ventral thoracic skin (Figure 2). Tests for Schmallenberg virus were negative.



Figure 2

Schistosomus reflexus in a calf

Other reproductive diseases

Physical trauma during calving caused vaginal fistulation into the caudal abdomen with associated abscessation and peritonitis in a four-year-old dairy cow submitted with a history of bleeding from the vulva. *T. pyogenes* was recovered from the para-rectal abscess.

Mastitis

A total of 1148 bacterial isolates were cultured from milk samples submitted from acute and chronic mastitis cases. 153 (13.3 per cent) samples yielded cultures of more than two organisms and were considered to be potentially contaminated. No bacteria were cultured in a further 121 samples. *E.coli* was the most frequently isolated organism and accounted for 20.5 per cent of isolates cultured.

Other frequently identified organisms included, *Streptococcus uberis* (16.4 per cent), *Staphylococcus aureus* (12.5 per cent), *Streptococcus* spp (6.9 per cent), alpha-haemolytic *Streptococcus* (4.5 per cent), *Pseudomonas* spp (4.4 per cent), Non Haem *Staphylococcus* spp (3.8 per cent), Coagulase Negative *Staphylococcus* spp (3.7 per cent) and Yeasts (3.2 per cent).

Neurological diseases

Clostridium botulinum type D toxin was diagnosed in 5 cases during the 3rd quarter of 2013.

Halogenated salicylanilide toxicosis was diagnosed in a seventeen-month-old steer with a history of pyrexia and head pressing following over-dosing with closantel. On histological examination of the brain, angio-centric rarefaction and perivascular leucomalacia affecting white matter of cerebrum, cerebellum and brainstem were seen. These changes were considered to be consistent with salicylanilide toxicity in this case.

Pituitary abscessation

A twelve-month-old bullock was submitted with a history of recumbency. On gross post mortem examination a molar tooth root abscess and pituitary abscessation were detected. Tracking from the molar abscess into the pituitary fossa region was demonstrated on dissection. It was considered that the tooth root abscess was the source of the infection in this case.

Other diseases of cattle

Clostridium chauvoei myositis was diagnosed on the basis of full post mortem, histology and bacteriology in two six-month-old bulls. It was noted that in this case the animals were not vaccinated against Blackleg. Several other instances of Blackleg were seen during the quarter, all in unvaccinated or partially vaccinated animals.



Figure 3

Blackleg lesion
in a six-month-
old bull

Sporadic lymphosarcoma

A fourteen-year-old cow showing peripheral lymphadenopathy was submitted for examination. Gross and histological findings were consistent with the adult form of sporadic bovine lymphosarcoma. The case was serologically negative for enzootic bovine leucosis (EBL).

Lymphosarcoma was also diagnosed on the basis of histological findings in an eighteen-month-old steer with multi-nodular tumours in the liver and abomasum. The case was serologically negative for EBL.

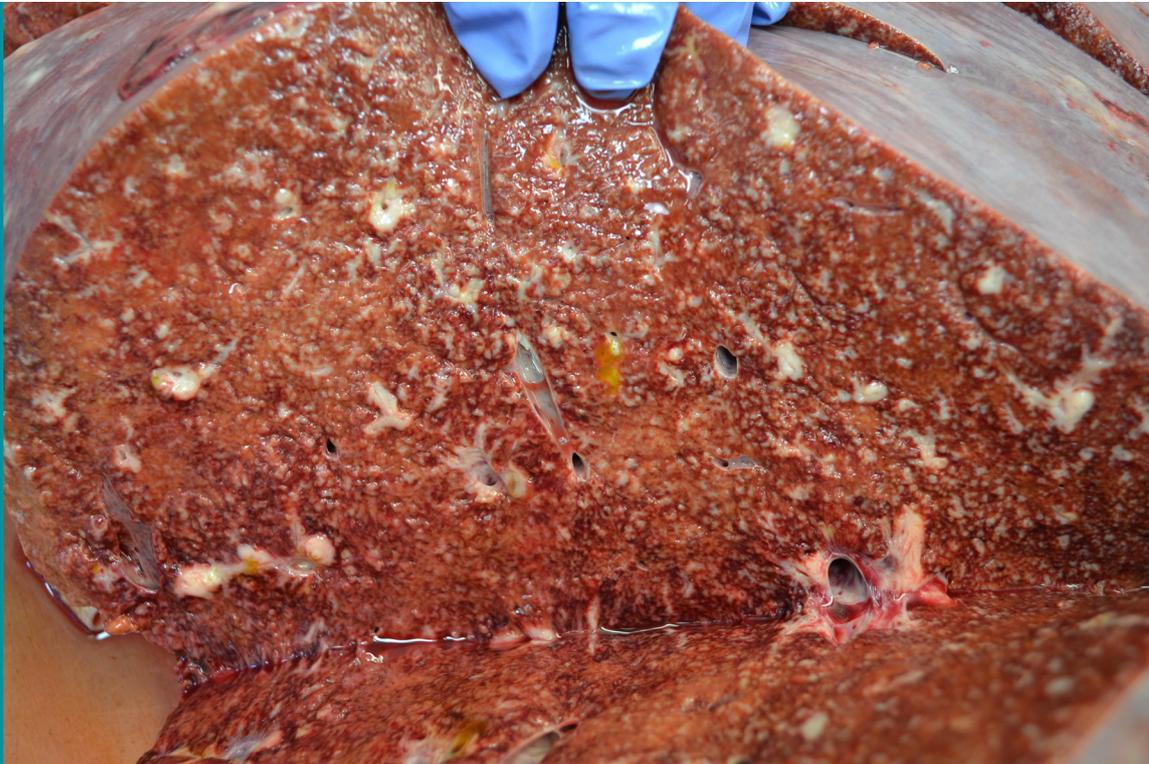


Figure 4

Sporadic lymphosarcoma lesions in the liver of an adult cow

Cutaneous actinobacillosis

Cutaneous actinobacillosis was diagnosed histologically in biopsy material taken from an ill-thrifty eighteen-month-old steer which had ulcerating skin lesions affecting the flank and hock. On histology there were pyogranulomas in the dermis containing Splendore – Hoeppli material and surrounded by granulation tissue.

SMALL RUMINANTS: SHEEP

Respiratory diseases

Respiratory disease was identified in 11 ovine post mortem submissions during this quarter. Jaagsiekte (four cases), pasteurellosis (three cases) and parasitic pneumonia (one case) were the most common diagnoses.

One instance of ovine pulmonary adenocarcinoma (OPA, Jaagsiekte) predisposing to *Pasteurella* pneumonia was recorded. In two of the OPA cases recorded there was inter-current chronic liver fluke infection.

Pulmonary abscessation as a sequel to lungworm infection was diagnosed in a two-year-old Blue Faced Leicester ewe. On gross examination there was extensive consolidation, abscessation and fibrosis of the lung parenchyma with the presence of foul-smelling watery brown/grey pus. Histological examination showed necrotising bronchopneumonia with heavy bacterial colonisation, haemorrhage and occasional nematode profiles.

Alimentary diseases

Larval paraphistomosis

Larval paraphistomosis was diagnosed in two flocks in sheep of between one and four years of age. All affected sheep presented with watery diarrhoea and death and large numbers (25,000 to 34,000) of paraphistome larvae were detected in the small intestine.

Fasciolosis

Cases of chronic fasciolosis were seen in shearlings and ewes during the reporting period, in some cases these findings were incidental to other conditions such as OPA. Acute and sub-acute liver fluke disease was diagnosed in all classes of sheep including lambs.

It was noted that in some instances liver histology showed the presence of older chronic disease and more recent acute or sub-acute infection.

Johne's disease

8 ovine faecal samples were examined microscopically using Ziehl-Neelsen staining for MAP. No samples contained any acid-fast organisms typical of MAP. 6 ovine blood samples were tested for antibodies to MAP, none of which were positive.

Reproductive diseases

Abortion

Specimens from 2 ovine abortions and stillbirths were examined during the 3rd quarter. A significant pathogen was detected in 1 case (50.0 per cent). Pathogen identified was *Chlamydophilia abortus* (1 case, 50.0 per cent).

Neurological diseases

No cases of listerial encephalitis were confirmed by post mortem examination during the 3rd quarter of 2013.

Skin diseases

No cases of sheep scab were examined during the 3rd quarter of 2013.

Other diseases

Valvular endocarditis

An eight-month-old ram was submitted with a history of sudden onset of dyspnoea and death. Gross examination showed the presence of small lesions of vegetative endocarditis on the left and right atrioventricular valves. Pale myocardial and renal infarcts were present and there was submandibular oedema and profuse straw coloured fluid in the body cavities. *E.coli* was recovered from the valve lesions.

HORSES:

18 swabs were examined for the presence of *Tayorella equigenitalis* during this quarter, all of which were negative. 6 swabs were cultured from horses with a history suggestive of strangles during this quarter, all of which were negative.

A five-month-old orphan foal was submitted for post mortem examination after being found in a dehydrated state. On gross examination there was a circumferential narrow lesion in the jejunum associated with congestion and distension of the proximal small intestine and gastric rupture. Histologically the lesion was associated with eosinophil infiltration in the submucosa and muscularis layers of the intestine. Ideopathic focal eosinophilic enteritis (IFEE) resulting in a functional intestinal obstruction and gastric rupture was diagnosed. IFEE is a reported syndrome of unknown cause wherein eosinophils infiltrate the intestine at one site, either focally and circumferentially and result in obstruction.

PIGS:

A complex disease situation was encountered in a pig herd with problems of ill thrift and sudden death in growing pigs of around fourteen weeks of age. PCV-2 infection, pneumonia due to *Bordetella bronchiseptica* and gastric ulceration and perforation with peritonitis were all detected during the course of the investigation. An outbreak of diarrhoea in three-day-old piglets was diagnosed as being due to *Enterococcus durans* infection.

BIRDS: Cage and aviary

A four-week-old Amazon yellow naped parrot was submitted with a history of food regurgitation and sudden death. The bird was one of five to die from a group of nine.

Full gross post mortem examination and histology was carried out and a diagnosis of avian polyoma virus was made on the basis of the lesions seen in the liver, spleen and bursa of the bird.

In the liver there was severe congestion, oedema and generalised hepatoparenchymal necrosis, with the sparing of islands of hepatocytes adjacent to the periportal vessels. In the spleen there was congestion and generalised necrosis of the lymphoid tissue, with a marked presence of enlarged nuclei showing marginated chromatin and amphophilic inclusions. In the bursa there was lymphoid depletion and generalised lympholysis, particularly in the central regions of the follicles.