

Disease Surveillance and Investigation Branch

# DISEASE SURVEILLANCE REPORT

## Northern Ireland Disease Surveillance Report 1st April to 30th June 2018.

- Infectious bovine rhinotracheitis in cattle
- Jejunal haemorrhage syndrome in cattle
- Bovine neonatal pancytopenia in calves
- Listeriosis in sheep
- Gastric ulceration in pigs
- Trichomonosis in pigeons

These are some of the matters discussed in the Northern Ireland animal disease surveillance quarterly report for 1st April to 30th June 2018.

### CATTLE:

#### Respiratory diseases

Respiratory disease was identified in 56 cattle postmortem submissions between April and June 2018. The most common pathogens identified included *Mycoplasma bovis* (seventeen cases), *Pasteurella multocida* (fourteen cases), *Mannheimia haemolytica* (eleven cases), *Trueperella pyogenes* (seven cases), respiratory syncytial virus (three cases) and *Histophilus somni* (two cases).

#### Infectious bovine rhinotracheitis

Infectious bovine rhinotracheitis (IBR) was diagnosed in a five-month-old calf. The trachea was lined with a thick yellow suppurative pseudomembrane and nasal mucosal surfaces were similarly affected. There was severe bronchopneumonia with miliary suppurative foci in consolidated anteroventral lung lobes. IBRV was detected by PCR in lung and trachea and *Mycoplasma bovis* was also detected by PCR in pneumonic lung. Histological lesions in lung were also suggestive of pneumonia due to *Mycoplasma bovis*.

Bronchointerstitial pneumonia was diagnosed in a four-month-old calf. Histologically there was bronchocentric abscessation, bronchiectasis, and heavy bronchiolar and alveolar inflammatory infiltrate. There were occasional alveolar epithelial syncytia. Bovine respiratory syncytial virus (BRSV) was detected by immunofluorescence and a mixed bacterial culture of *Trueperella pyogenes* and *Pasteurella multocida* was recovered from pneumonic lung.

#### Alimentary diseases

*Salmonella* Dublin septicaemia was diagnosed in an ill-thrifty and diarrhoeic six-week-old calf. There was ulceration in the lingual fossa and on the lateral aspect of the torus of the tongue while there was also an abscess within the torus of the tongue. *Fusobacterium necrophorum* was cultured from the ulcerated lesions (calf diphtheria) and *Trueperella pyogenes* was cultured from the lingual abscess. *Salmonella* Dublin was isolated from multiple tissues.

Jejunal haemorrhage syndrome was suspected as the cause of death of a six-year-old dairy cow with severe haemorrhage into the jejunum which was distended with clotted blood and watery fluid. Jejunal haemorrhage syndrome is an increasingly reported condition which predominately affects dairy cows. The definitive aetiology is unknown but it is considered that *Clostridium perfringens* type A, *Aspergillus fumigatus*, mycotoxins or nutritional factors may be involved.

### 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, April to June 2018

Pathogen	Number	
	Tested	Positive ( per cent)
<i>Cryptosporidium</i> species	202	71 (35.1%)
Rotavirus	204	44 (21.6%)
Coronavirus	204	17 (8.3%)
<i>Escherichia coli</i> K99	129	0 (0.0%)

### 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, April to June 2018.

	Total	No of parasitic ova					% positive
		Negative	+	++	+++	++++	
Liver fluke							
Bovine	610	551	46	12	0	1	9.7%
Ovine	176	150	19	2	2	3	14.8%
Paramphistome							
Bovine	607	329	46	94	53	89	45.8%
Ovine	176	120	19	28	20	27	31.8%
Coccidia							
Bovine	657	365	246	12	1	5	44.3%
Ovine	209	55	102	23	3	2	73.7%
<b>Strongyle worm egg count</b>							
	Total	<500 epg	≥500 epg				% Positive
Bovine	655	630	25				3.8%
Ovine	209	173	36				17.2%

≥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 on 411 bovine faecal samples by PCR. MAP was detected in 55 samples (13.4 per cent). Of 4799 bovine blood samples that were tested for antibodies to MAP 320 (6.7 per cent) were positive.

## Reproductive and mammary diseases

### Abortion

Specimens from 52 bovine abortions and stillbirths were examined during the 2nd quarter. Significant pathogens were detected in 17 cases (32.7 per cent). Of these, *Trueperella pyogenes* (4 cases, 7.7 per cent) and *Neospora caninum* (4 cases, 7.7 per cent) were the most commonly identified pathogens. Other pathogens identified included *Bacillus licheniformis* (3 cases, 5.8 per cent), *E coli* (3 cases, 5.8 per cent) and bovine viral diarrhoea virus (1 case, 1.9 per cent).

### Mastitis

A total of 236 bacterial isolates were cultured from milk samples submitted from acute and chronic mastitis cases. Twenty-five (10.6 per cent) samples yielded cultures of more than two organisms and were considered to be potentially contaminated. No bacteria were cultured in a further 19 samples. *Streptococcus uberis* was the most frequently isolated organism and accounted for 22.5 per cent of isolates cultured. Other frequently identified organisms included, *E coli* (20.3 per cent), alpha-haemolytic *Streptococci* (6.4 per cent), *Staphylococcus aureus* (5.5 per cent) and other *Staphylococcus* species (4.7 per cent).

### Neurological diseases

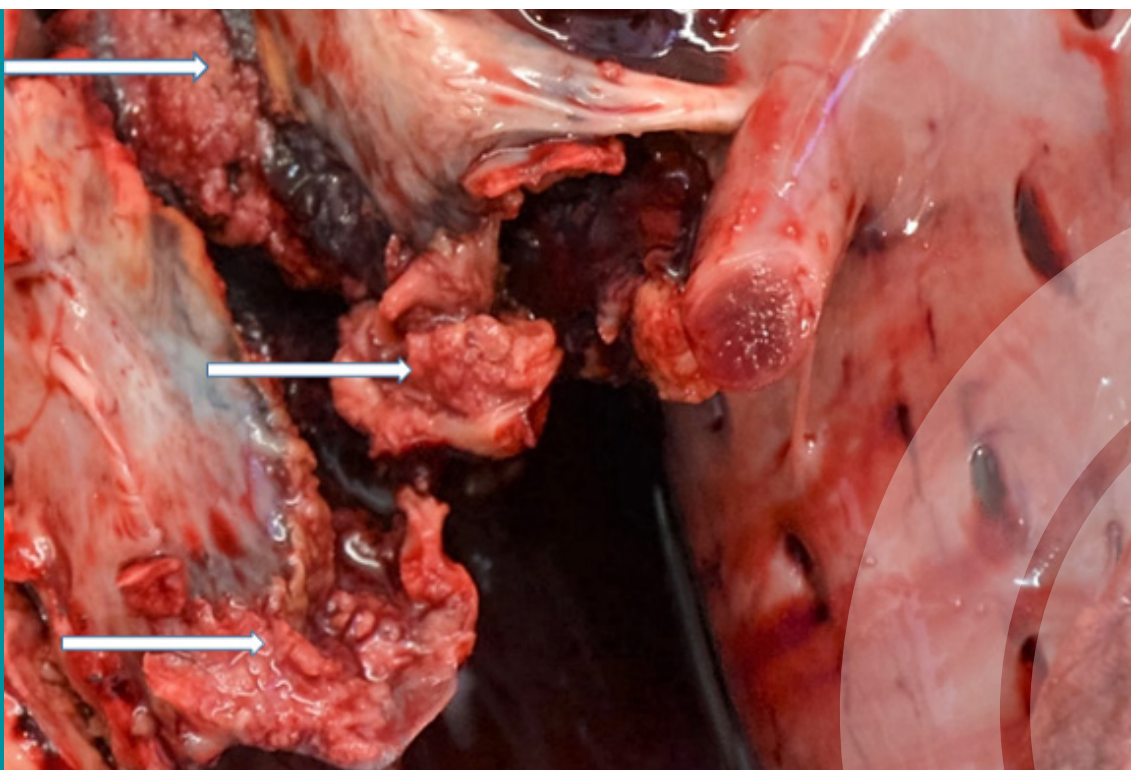
Botulism due to *Clostridium botulinum* type C/D toxin was diagnosed in three cases during the 2nd quarter of 2018. One case involved two ten-month-old calves which were euthanased after developing paresis. Both calves were housed and fed on silage. Botulinum toxin was detected in rumen and small intestinal fluid using a culture-ELISA technique.

Lead toxicity was diagnosed in a one-year-old bull. The bull presented clinically with bruxism, hyperexcitability and slight dehydration. Gross postmortem findings were unremarkable but 62.5 ug/g (wet weight) of lead was detected in kidney.

A spinal abscess in the mid-lumbar region was detected in a four-year-old cow that presented in recumbency and with a lack of pain perception in the hind limbs and which was euthanased. *Trueperella pyogenes* was recovered in pure culture from the abscess.

### Other diseases

Two cows which died after presenting with respiratory signs were submitted from the same dairy herd, one week apart. In both animals there was a large, vegetative mass on the right atrioventricular valve, with loss of definition of the valvular structure. *Streptococcal* species were isolated from the affected valve in the first cow and *Trueperella pyogenes* was isolated from the affected valve in the second cow submitted.



**Figure 1**

Lesions of vegetative endocarditis (white arrows) on the atrioventricular valve of a cow.

Bovine neonatal pancytopenia (BNP) was diagnosed based on gross and histological findings in a two week old calf from a suckler herd. The calf had haemorrhaged from the sites of disbudding which had been carried out one week before death. At postmortem examination there was blood staining on the face, neck and forelegs. Histologically there was hypoplasia of bone marrow haematopoietic cells. The gross and histological findings were considered consistent with bovine neonatal pancytopenia. A second two-week-old calf was presented from the same herd two weeks later. The calf was anaemic and there were ecchymoses and petechiae throughout the carcass. Histological findings were again suggestive of BNP. The dams of both calves had been vaccinated with a live BVDV vaccine.

## SHEEP:

### Respiratory diseases

Respiratory disease was identified in 16 ovine postmortem submissions during this quarter. *Mannheimia haemolytica* (nine cases) and Jaagsiekte (four cases) were the most common diagnoses.

### Alimentary disease

#### Abomasal emptying defect

Two cases of abomasal emptying defect were recorded during the quarter. One case affected an 18 month-old Suffolk ram which presented very thin and with a distended abdomen. On post-mortem examination the abomasum was greatly distended.

### Poisoning due to *Pieris* toxicity

Four cases of poisoning due to ingestion of the common garden shrub *Pieris* were recorded during the quarter. In one case five ewes presented collapsed, salivating and had subnormal temperatures. Large numbers of leaves similar to those of the ornamental shrub *Pieris* (Forest Flame) were present in the rumen. *Pieris* is from the same family of plants as *Rhododendron* and the plants contain the toxin acetylandromedol, which can cause fatal poisoning in animals.

### Nematodirosis

Twenty one cases of nematodirosis affecting lambs between four and 12 weeks were recorded during the quarter. In one case heavy *Nematodirus* burdens were combined with acute renal necrosis. Grossly the kidneys were pale, enlarged and contained multiple pale foci of necrosis in the medulla. Histologically there was acute necrosis of renal medullary papillae which was considered to have been a manifestation of the synergistic effects of toxic and hypoxic insult. In this case NSAID therapy had been administered to lambs in which renal circulation had already been compromised by dehydration due to parasitic gastroenteritis.



**Figure 2**

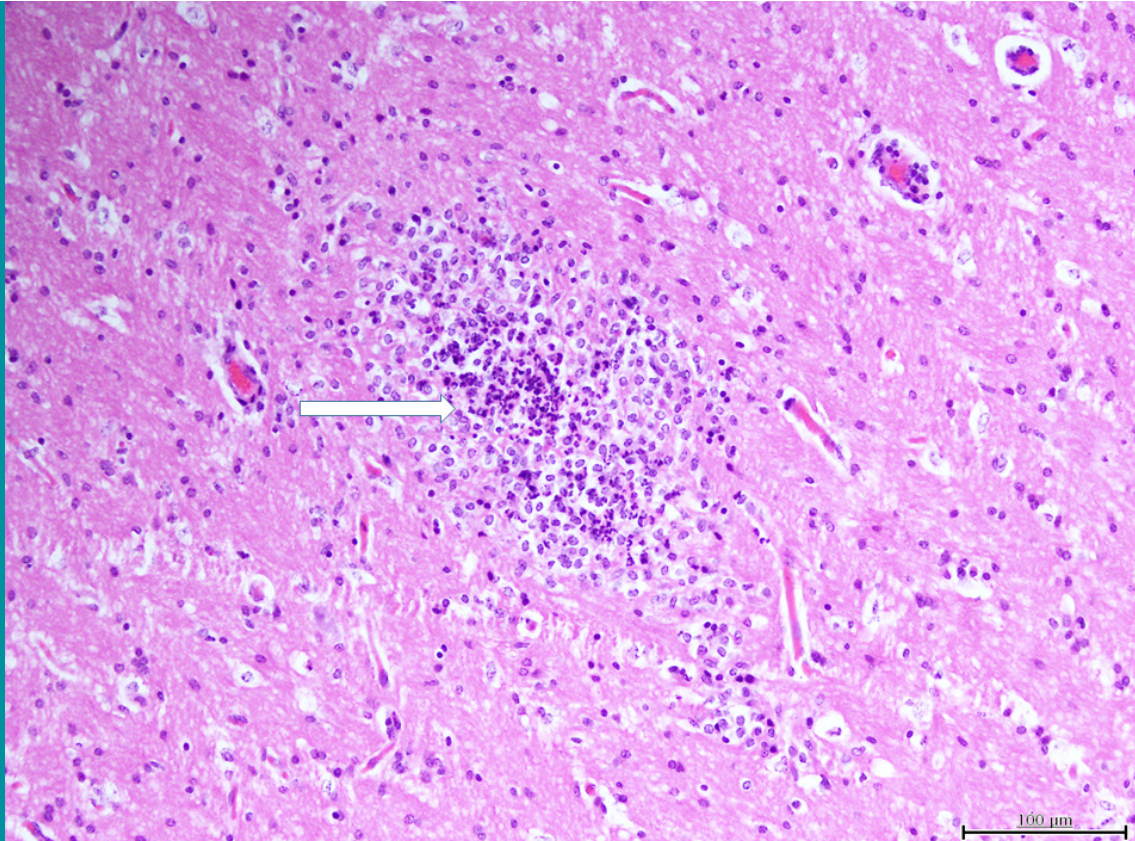
Medullary necrosis (white arrowheads) in the kidney of a lamb.

### Reproductive diseases

Specimens from 19 ovine abortions and stillbirths were examined during the 2nd quarter of 2018. The pathogens identified were *Chlamydophila* (7 cases, 36.8 per cent), *Toxoplasma* (5 cases, 26.3 per cent), *Leptospira* (2 cases, 10.5 per cent), *Campylobacter* (1 case, 5.3 per cent), *Salmonella* Dublin (1 case, 5.3 per cent), *E coli* (1 case, 5.3 per cent) and *Listeria* (1 cases, 5.3 per cent).

### Neurological diseases

Three cases of encephalitis due to listeriosis were diagnosed during the quarter, two cases affected adult ewes and one case occurred in a seven-week-old lamb.



**Figure 3**

Micro-abscessation (white arrow) in the brainstem of a ewe with listeriosis.

### PIGS:

#### Gastric ulceration

Five cases of gastric ulceration with haemorrhage were recorded during the quarter. Typically cases affected fattening pigs. Pigs presented lethargic, weak or unable to rise, pale and appeared hairy. Gastric ulceration in pigs is considered to have a multifactorial aetiology. Factors which have been shown to influence the development of porcine gastric ulcers include feed particle size with very fine particle size predisposing to ulcer development. Stress such as transportation, mixing, overcrowding and starvation increases the risk. Gastric ulceration has also been associated with infections by *helicobacters*, *lactobacilli*, and parasites.

#### Vegetative endocarditis

Endocarditis was diagnosed in a sow. Severe vegetative lesions were present on both the right and left atrioventricular valves. An alpha-haemolytic *Streptococcus* species was cultured from the heart valves.

#### Squamous cell carcinoma

An 8 year old pet Kunekune pig was euthanased due to an enlarging mass on the left side of the face. The mass was multilobulated, solid and extended rostrally from the caudal border of the ramus of the mandible. The left mandible was thickened significantly and the mass extended into a cavity in the bone. There was ulceration of the skin and necrosis of exposed tumour tissue. Histological findings were consistent with a moderately well differentiated, locally invasive squamous cell carcinoma.

There was no gross or histological evidence of metastasis to lymph nodes or other organ systems.

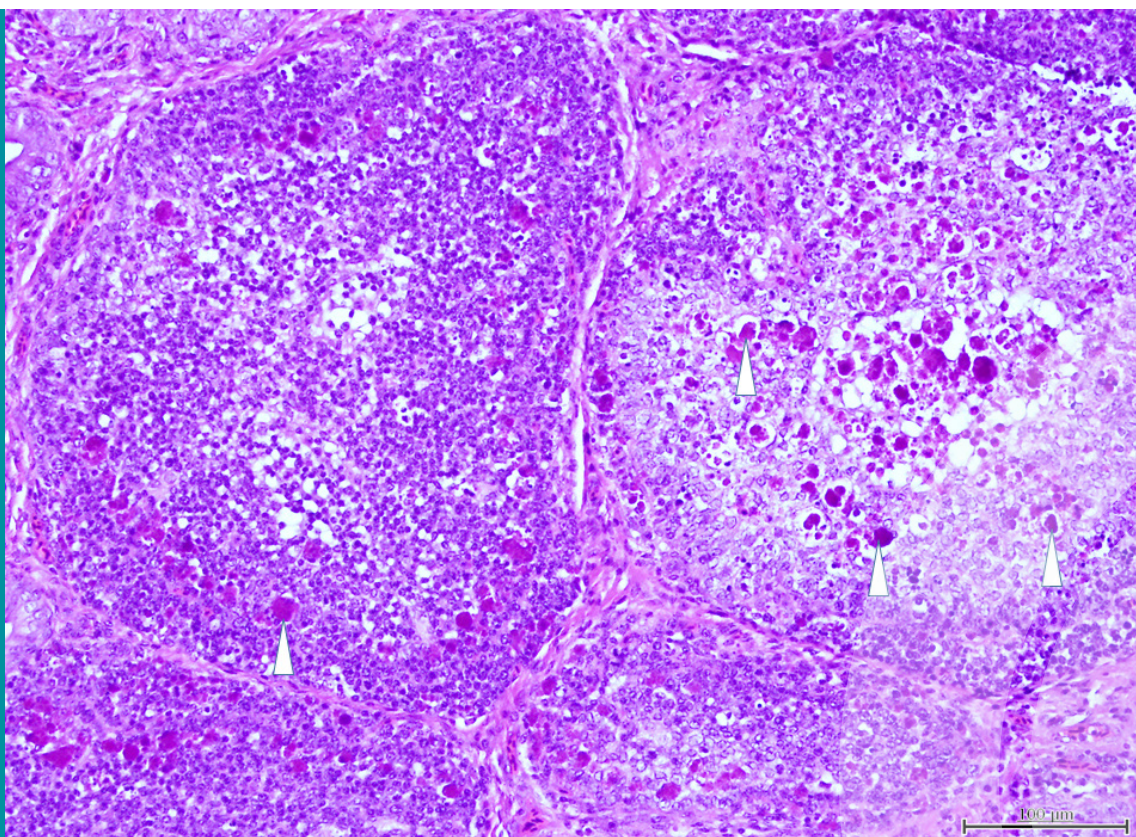
### AVIAN:

Two pigeons from a loft experiencing depression, inappetance and increased mortality in juvenile birds were submitted. Both pigeons were in poor condition and had a lice burden. Mucosa of the oropharynx and oesophagus was inflamed, ulcerated and overlain with caseo-necrotic debris. Motile flagellated protozoa were visible in oropharyngeal swab material confirming trichomonosis. Trichomonosis in pigeons is caused by *Trichomonas gallinae*. A high proportion of adult pigeons are silent carriers of the organism, with infection commonly passing from the parent birds to offspring via crop milk. Predisposing factors to infection may include feeding on abrasive food and concurrent viral infections. Histopathological lesions consistent with circoviral infection were also present whilst intranuclear inclusion bodies highly suggestive of herpesvirus infection were present in hepatocytes.



**Figure 4**

Necrotic debris (white arrows) in the oropharynx and oesophagus in a case of trichomonosis in a pigeon



**Figure 5**

Intracytoplasmic inclusion bodies (white arrowheads) in the bursa of a pigeon infected by circovirus.

**OTHER:**

Intestinal adenocarcinoma causing constriction of the intestine and leading to intestinal obstruction was diagnosed based on typical histological findings in an aged Californian sea lion.

Tuberculosis was diagnosed in a farm cat removed from a farm which was undergoing repeated tuberculosis breakdowns. Multiple small firm nodules, less than 1 mm in diameter, were scattered throughout the lungs. Histologically there were multifocal to confluent nodules of lymphogranulocytic inflammation throughout the pulmonary parenchyma. Typically these lesions were organised with lymphocytes predominating at the periphery, and macrophages at the core of the nodule. There were several foci of caseous necrosis with mineralisation containing sparse acid-fast bacilli. These histological features were considered indicative of TB. *Mycobacterium bovis* was cultured from lung and mediastinal lymph node.