Great Britain miscellaneous and exotic farmed species quarterly report

Disease surveillance and emerging threats

Volume 35: Quarter 4 of 2022 (October to December)

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Introduction and overview

This quarterly report reviews disease trends and disease threats for the fourth Quarter of 2022 (October to December).

It contains analyses carried out on disease data gathered from the Animal and Plant Health Agency (APHA), SRUC Veterinary Services division of Scotland's Rural College (SRUC) and partner post mortem providers and intelligence gathered through the Miscellaneous and Exotic Farmed Species Expert Group networks.

In addition, links to other sources of information including reports from other parts of the AP HA and Defra agencies are included. A full explanation of how data is analysed is provided on the APHA species disease surveillance reports: data analyses page on GOV.UK.

Issues and trends

Nothing to report this quarter.

Diagnostic submission data

The number of diagnostic submissions in Quarter 4 of 2022 (October to December) for alpacas, llamas and farmed deer (see Table 1). The APHA figures include submissions to partner post-mortem providers (PPP). Other miscellaneous and exotic species may also be received in small numbers.

Carcase and non-carcase submissions for the same Quarter (October to December) for period 2018 to 2022 are shown in Figure 1.

Table 1: Diagnostic submissions in Quarter 4 (October to December) for alpacas, llamas and farmed deer.

October to December	Non-carcase submissions APHA	Non-carcase submissions SAC	Total non-carcase submissions	Carcase submissions APHA	Carcase submissions SAC	Total carcase submissions	Grand total
2018	14	8	22	27	9	36	58
2019	15	11	26	26	8	34	60
2020	13	15	28	18	5	23	51
2021	20	27	47	20	4	24	71
2022	8	38	46	20	2	22	68

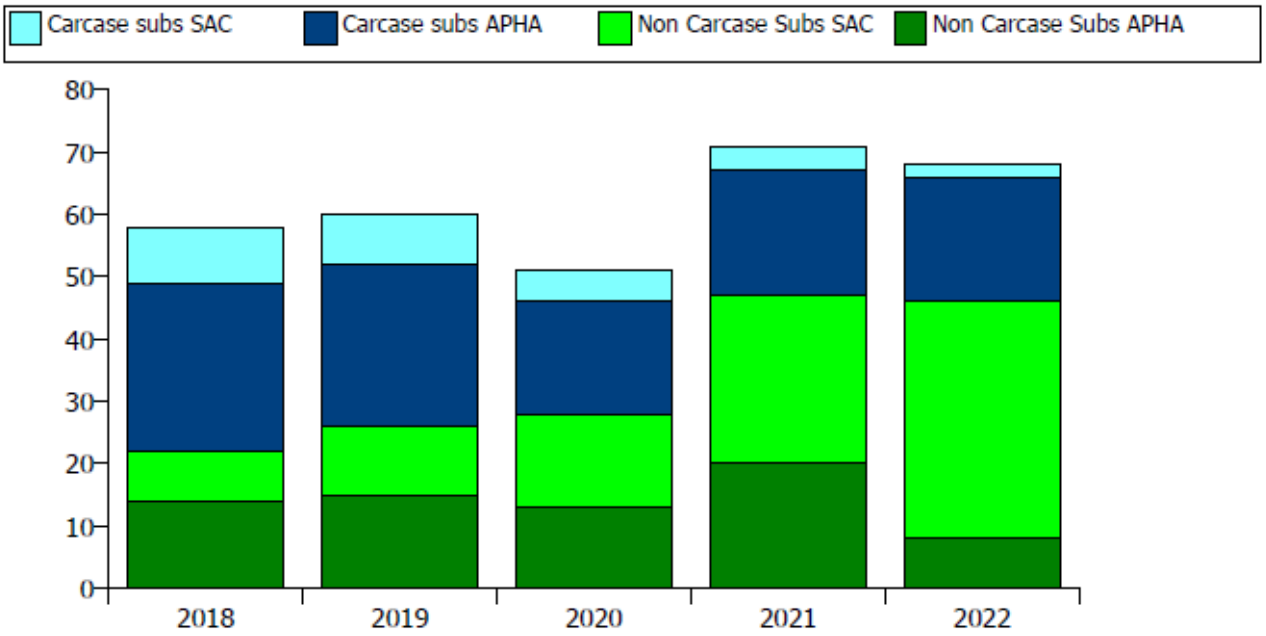

Figure 1: Carcase and non-carcase submissions for Quarter 4 (October to December) Period 2018 to 2022

Total diagnostic submissions for Quarter 4 for all years (2018 to 2022) for each main species covered by this report and for each main geographical area (see Table 2).

Table 2: Total diagnostic submissions for Quarter 4 for all years (2018 to 2022) in the different geographical areas.

Regions	Alpaca	Deer	Llama	Total submissions
Eastern England	57	10	1	68
Northern England	33	9	5	42
Scotland	40	37	5	78
Wales	11	6	0	17
Western England	41	11	3	55
Unknown	26	6	3	35
Regions total	208	79	17	308

Annual Results (January to December 2022) compared to previous 4 years: number of submissions in Table 3, graphically represented on Figure 2 and divided in the different geographical areas on Table 4.

Table 3: Total diagnostic submissions for all years (2018 to 2022).

2018	68	47	115	121	35	156	271
2019	62	53	115	106	29	135	250
2020	66	46	112	77	13	90	202
2021	80	89	169	93	19	112	281
2022	70	123	193	80	17	97	290

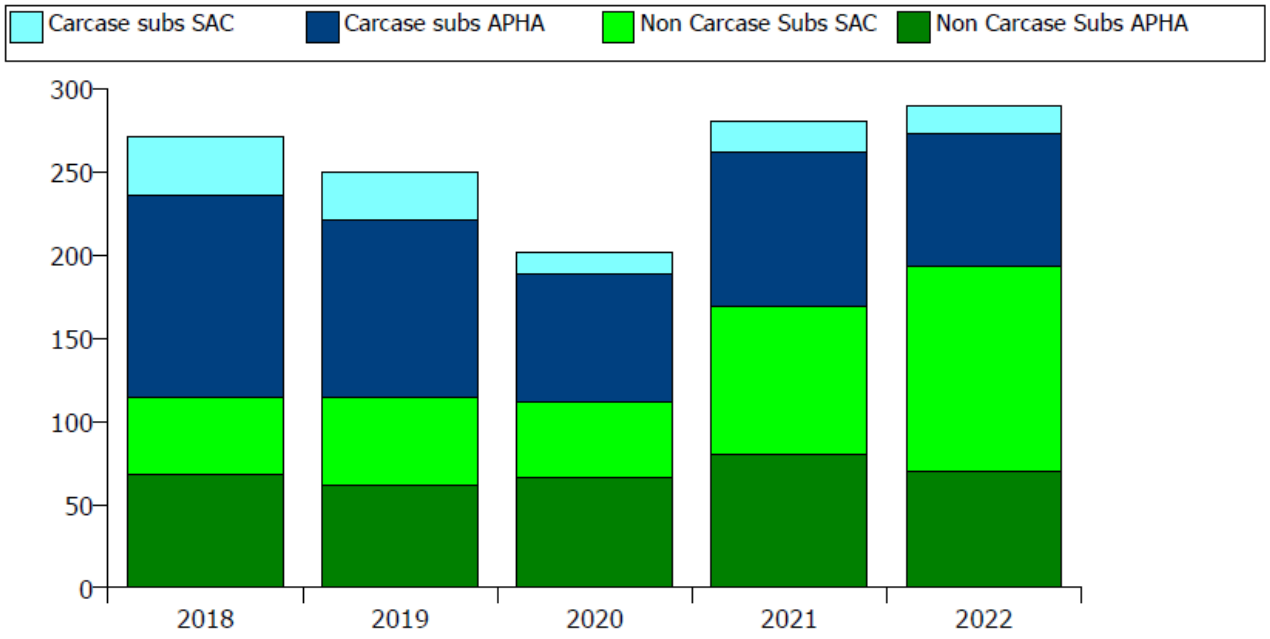

Figure 2 : Total diagnostic submissions for all years (2018 to 2022) in a graph.

Table 4: Total diagnostic submissions for all years (2018 to 2022) for each main species covered by this report and for each main geographical area.

Regions	Alpaca	Deer	Llama	Total submissions
Eastern England	223	62	10	295
Northern England	154	33	15	197
Scotland	171	127	19	309
Wales	53	17	3	73
Western England	193	50	14	257
Unknown	115	20	15	150
Regions summary	909	309	76	1,294

New and re-emerging diseases and threats

Nothing to report this quarter.

Diagnoses from the Great Britain scanning surveillance network including unusual diagnoses

Camelids

Suspected ryegrass staggers in an alpaca

An adult alpaca was submitted for examination after being found dead with blood around its head. The previous evening, the owner had noted some blood on another female's fleece but could not find a source. The submitted animal had given birth to a healthy cria in July 2022 and was again pregnant (approximately 2-month-old foetus). The animals were vaccinated against clostridial species and were fed camelid feed.

On postmortem examination the inside of the upper lip was torn with free clotted blood within the buccal cavity, trachea and rumen. The kidneys were pale, but the carcass was otherwise unremarkable. Ancillary testing could not provide further information regarding the cause of death.

However, histological examination found mild, multifocal proximal axonopathy (cerebellar cortex). The most likely differential for this type of changes is perennial ryegrass stagers caused by the ingestion of plants containing a specific fungus (mycotoxin). Unlike the spring and early summer ryegrass staggers, this syndrome seems to be seen when pastures are

short and dry in the autumn, with stock grazing closer to the base of the plant. When seen, clinical signs quoted are stiff gait and lack of coordination which may progress to tremoring, staggering, and collapse.

While neurological signs were not reported in the submitted animal, it was suggested that the lip injury could have been a consequence of neurological signs and the added blood inhalation had ultimately resulted in the death of the animal.

Tuberculosis in an alpaca due to Mycobacterium microti

Multiple lesions typical of tuberculosis were seen in the carcase of an alpaca received for TB screening. All lung lobes had diffuse, 2 to 10 mm diameter, white caseous lesions as shown in figure 3, and the bronchial and mediastinal lymph nodes had similar multiple 11 to 50 mm diameter caseous lesions as shown in figure 4. The mesenteric lymph nodes had multiple lesions, some greater than 50 mm diameter. A PCR was negative for *Mycobacterium bovis,* but it was positive for *Mycobacterium microti*.

Figure 3: diffuse lesions in the lung lobes of an alpaca due to *Mycobacterium microti*.

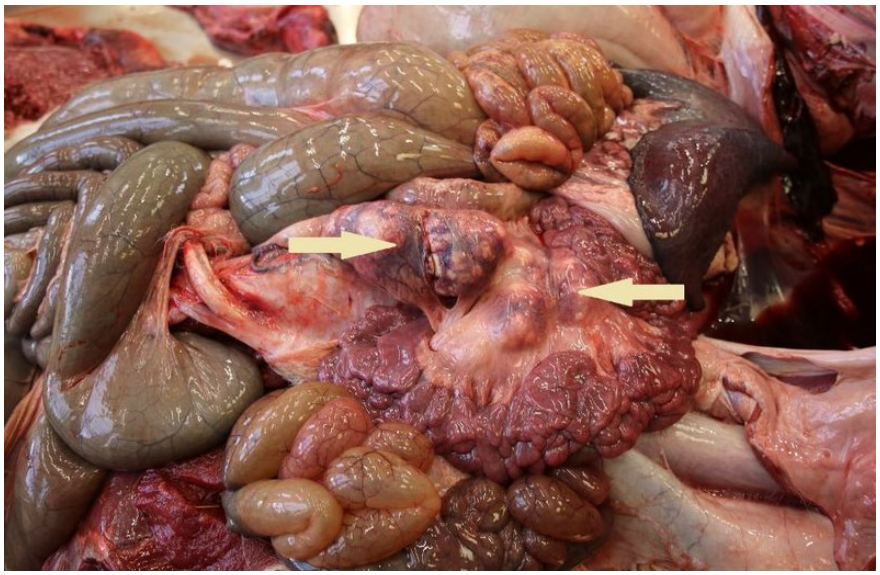

Figure 4: enlarged mesenteric lymph nodes in an alpaca due to tuberculosis.

Nephrosis in an alpaca

Reduced demeanour and loss of weight over 7 to 10 days were reported in a 10-year-old alpaca. It had a heart murmur and ascites which reduced after administration of a diuretic and a non-steroidal anti-inflammatory drug. Raised urea and creatinine concentrations suggested renal disease and the animal was euthanased.

The only site of gross pathology was the kidneys, suggesting renal failure likely to have caused circulatory failure leading to ascites and heart murmur. Histopathology identified renal lesions, with diffuse acute tubular injury with mineralisation most suggestive of a toxic or anoxic cause.

Examination of other viscera and the brain did not identify any lesions of significance. It appeared that this alpaca had renal failure, however the underlying cause was not established. It was advised to check whether this animal could have had access to anything potentially toxic which could therefore be a risk to other animals on the premises.

Figure 5: pallor of the kidneys in an alpaca due to nephrosis of suspected toxic origin.

Farmed deer

Upper respiratory lesions in a red deer

The carcase of an 18-month-old red deer was submitted. It was one of two animals that had died following acute onset respiratory distress during handling. On gross examination there was evidence of tracheal stenosis which extended from the end of the larynx to roughly the

mid trachea. The trachea lumen was narrowed, it was fibrotic and had much reduced flexibility. Internally the mucosa was thickened with red gelatinous material and had a cobweb-like network of trabeculae on the surface. This material could not be scraped from the mucosa. The remaining caudal trachea was unaffected. Both lungs were deep red and showed extensive interlobular oedema with a small frill of red fibrin around the lung edges.

These striking tracheal lesions were deemed to represent scarring, most likely from a previous episode of bacterial or fungal infection. The cause of death was concluded to be acute respiratory decompensation which occurred due to the combination of these tracheal lesions and handling stress.

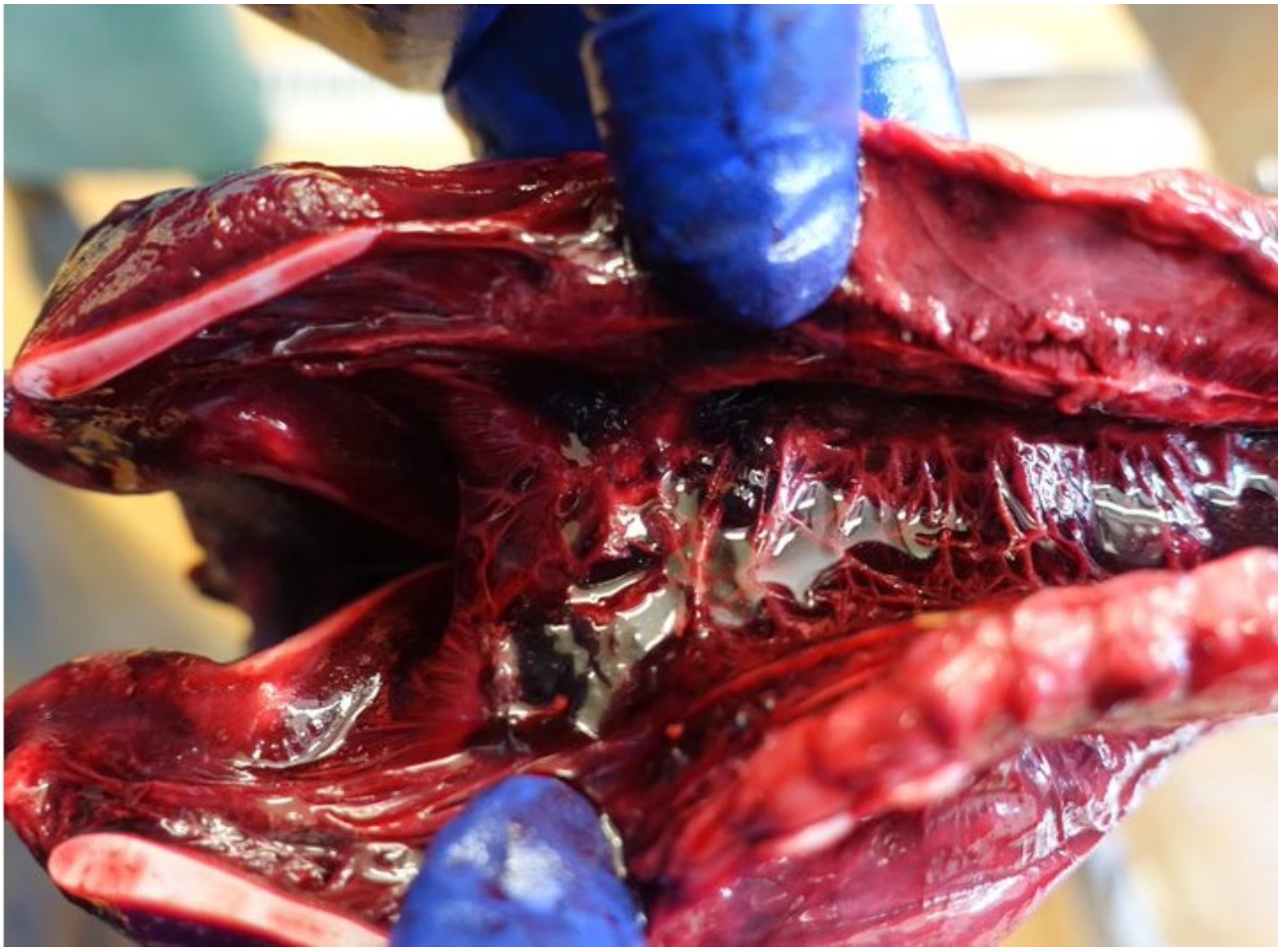

Figure 6: opened trachea with narrowed lumen with thickened mucosa with red gelatinous material and had a cobweb-like network of trabeculae on the surface.

Pituitary abscess and encephalitis in a reindeer

Neurological disease was described in an adult, castrated male reindeer, including a wide-based stance, swaying gait, and blindness in the left eye. The left eye was also noted to be bulging from its socket. This eventually progressed to recumbency despite aggressive antibiotic and supportive therapy. The animal was euthanased and submitted for post mortem examination. Variably sized, nodular type fibrous masses were noted on the tips of the antlers some of which showed areas of ulceration. Purulent material was noted on the fur just below the base of the left ear with numerous pockets of yellow purulent material in the underlying subcutaneous tissues.

Deeper dissection of the muscles around the base of the left ear and at the level of the left temporomandibular joint identified a large abscess containing yellow purulent material which had extended retrobulbar to the left eye. On gross examination of the brain the pituitary gland/fossa was filled with thick yellow purulent material (similar in consistency to that found in the retrobulbar abscess described above) and a large clot of fibrin covered the brainstem.

There was also a superficial corneal ulcer affecting the right eye. Brain histopathology confirmed a bacterial encephalitis with the most likely source of infection being the pituitary abscess seen grossly. Pituitary abscess syndrome has been reported in humans, cattle, goats, and sheep. There is also a single report in 4 free ranging White-Tailed Deer in the US (1).

Infection of the pituitary gland may occur via haematogenous or lymphatic spread from a foci of infection elsewhere in the body (which may have resolved as the time of presentation) and has been associated with the ringing of bull's noses or the use of anti-sucking devices in calves.

Haematogenous spread from the retrobulbar abscess to the pituitary gland was the presumed route on infection in this case. This was further supported by the finding of *Trueperella pyogenes* from both sites. Interestingly retrobulbar abscesses were found in 2 of the 4 deer in the paper above. In ruminants, male animals are over-represented most likely because of secondary infection of cranial trauma associated with head-butting behaviour.

Cases are usually sporadic with outbreaks rarely reported. Due to the location of the pituitary gland cranial nerve deficits (facial paralysis, ocular dysfunction or dysphagia) are commonly observed most likely due to the pressure caused by the enlarging abscess and its local extension causing damage to the adjacent cranial nerves and their nuclei. The blindness observed in the left eye and corneal ulcer on the right eye of this animal were most likely linked to the presence of the pituitary abscess.

The proliferative lesions on the antlers were identified as fibropapillomas. These nodular lesions have been associated with papilloma virus (PV) infection in several deer species, including reindeer. Papers do suggest a correlation between the appearance of such tumours and the hormonal status of the animal, showing a higher incidence in castrated males.

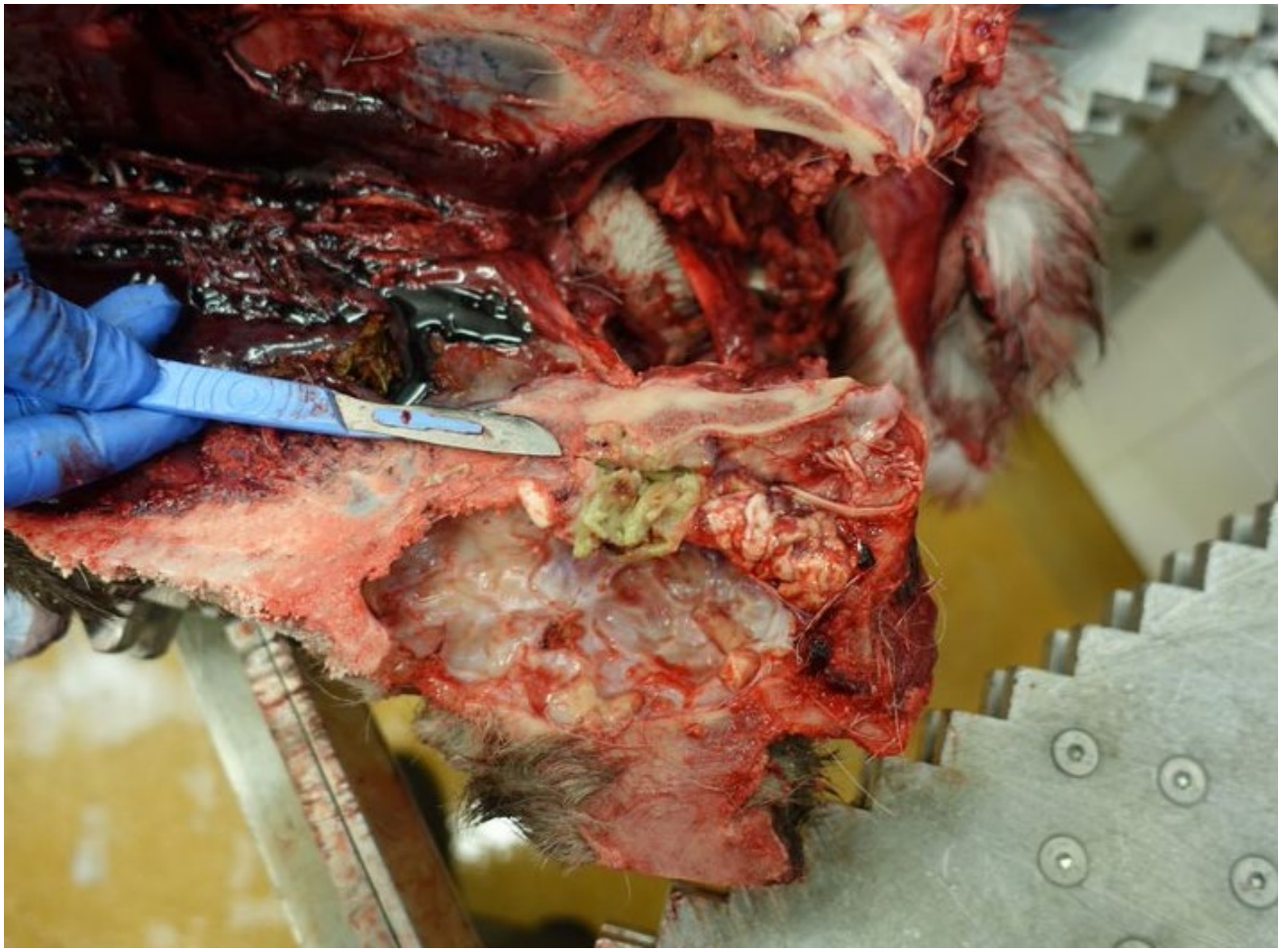

Figure 7:pituitary gland/fossa in an alpaca, filled with thick yellow purulent material.

Malignant Catarrhal Fever (MCF) in a reindeer

A 7-year-old male reindeer was submitted to investigate the cause of illness and death. The previous week the reindeer was quiet with a temperature of 39.8°C and had nasal discharge. Treatment with antibiotics and anti-inflammatories were given after which the animal markedly improved, but unfortunately relapsed and died.

Significant PME findings:

- a film of necrotic yellow material adhered to the mucosa of the larynx and trachea, and thick deposits of this material in the larynx consistent with a tracheitis and laryngitis
- Fibrin deposits on the peritoneal cavity, spleen and liver
- abomasal ulcers
- the left kidney had a pale cortex with white mottling over the surface. There were 2-millimetre diameter red spots in a few locations plus red striations throughout the cortices of both kidneys. The medullas were dark red in colour. The right kidney had zones of pale brown areas on a mottled serosal surface

- engorged meningeal blood vessels
- Bilateral ocular discharge
- the multiple gross lesions identified in this reindeer were indicative of systemic disease. PCR testing of the spleen was positive for the strain of the gamma herpesvirus that causes MCF (OvHV-2)

MCF affects cattle and some other ruminants including deer, it is usually fatal and sporadic but some 'outbreaks' have been reported. In the UK, OvHV-2, which is carried asymptomatically by sheep, is the most likely form of the virus to infect other susceptible ruminants. Infection results from contact between susceptible animals and infectious sheep, or by indirect contact via handling equipment. Reindeer should not be kept near sheep to avoid the risk of virus exposure.

Signs of disease may develop some time after exposure and predisposing factors are poorly characterised. Clinical signs may include sudden death, dysentery, oculonasal discharge, corneal opacity and neurological signs.

Other

Antelope with suspected plant poisoning

Severe, renal tubular injury was diagnosed in an adult lechwe antelope which had died suddenly and was submitted for post-mortem. There was a history of chronic weight loss and raised urea levels had been identified on biochemistry. Examination found the animal to have minimal fat levels and very poor levels of skeletal musculature. The abomasal lumen was covered in a thick, tar like exudate with small blood clots distributed over the mucosal surface.

Histology identified severe and diffuse tubular injury with abundant oxalate crystals. Long term consumption of oxalate containing plants was proposed as the most likely source and a review of the diet was advocated.

Horizon scanning

APHA's new Endemic Disease Alert System

This is a new component of the communications from our scanning surveillance network and a new system that the APHA will be using to keep you up to date with significant disease alerts and information, projects, publication of reports and other items.

This is independent of the notifiable disease alert system.

To receive these notifications please email SIU@apha.gov.uk with your:

- email address
- mobile number if you wish to receive text alerts

We hope that you find this new messaging system useful, and we welcome any suggestions or feedback. Email Surveillance Intelligence Unit at SIU@apha.gov.uk for more information.

Publications

None to report this quarter.

References

1. Elizabeth J. Elsmo and Heather Fenton "Pituitary Abscesses in Four Free-Ranging White-Tailed Deer (Odocoileus virginianus)," Journal of Wildlife Diseases 55(1), pages 254 to 257, (1 January 2019). https://doi.org/10.7589/2018-01-004.

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