DEFRA / AHT / BEVA

EQUINE QUARTERLY DISEASE SURVEILLANCE REPORT

Volume 3, No. 1: January – March 2007

Highlights in this issue:

- **Review of equine influenza diagnostics tests**
- **African Horse Sickness – a potential threat for the UK?**

Important note:
The data presented in this report must be interpreted with caution, as there is likely to be some bias in the way that samples are submitted for laboratory testing. For example they are influenced by factors such as owner attitude or financial constraints or are being conducted for routine screening as well as clinical investigation purposes. Consequently these data do not necessarily reflect true disease frequency within the equine population of Great Britain.

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Introduction

Welcome to the first quarterly equine disease surveillance report for 2007 produced by DEFRA, BEVA and the Animal Health Trust. Regular readers will be aware that this report collates equine disease data arising from multiple diagnostic laboratories and veterinary practices throughout the United Kingdom giving a unique insight into equine disease occurrence on a national scale.

New European Union regulations on the transportation of animals, including horses, came in to force on the 5th January 2007. Comprehensive details are available via the DEFRA website (Click here).

The first quarter of 2007 saw the launch of a joint initiative between the Animal Health Trust and the British Horse Society to raise awareness about 'strangles', the sometimes fatal bacterial infectious respiratory disease of horses caused by *Streptococcus equi*. The campaign, which will run for 2 years and hopes to raise £250,000 to support the AHT's research into improved diagnostics and vaccines for the disease, was launched by the AHT's President, the Princess Royal, on Thursday 1st February at the Royal Society of Medicine, London. An invited audience of over 100 guests heard the Princess recount her own recent experiences with strangles and this was complemented by short presentations by two AHT scientists who outlined the importance of the carrier state in the epidemiology of the disease and how modern technology was providing improved prospects for effective control. Further details on the campaign can be found on a dedicated website at www.strangles.org.

On 21st March 2007 the Irish Minister for Agriculture and Food, Mary Coughlan, announced that restrictions imposed as a result of last year's outbreak of equine infectious anaemia (EIA) in the Republic of Ireland would be lifted from the last affected premises. This followed a period of more than 90 days since the last of 28 cases was confirmed on 10th December 2006. It was confirmed that the final blood samples had been taken from those horses which remained under movement restriction and all test results had been negative for EIA. Since the first cases had been confirmed on 15th June 2006, almost 57,000 blood samples had been analysed for EIA with 28 cases confirmed. In Britain the Horseracing Regulatory Authority (HRA) confirmed that Instructions D23 and D24, which related to testing for EIA, would remain in place in spite of the changes to Irish restrictions announced on 21st March, although this would be subject to review in two months' time. Developments on EIA in Europe can be found on the DEFRA website (Click here).

On the 22nd March 2007, Barry Gardiner, the Minister for the Horse Industry, launched the industry-led Equine Health and Welfare Strategy for Great Britain at the National Equine Forum. Developed by the whole of the equine industry in conjunction with government and in response to the Animal Health and Welfare Strategy for Great Britain, the 10 year vision of this strategy is to achieve high standards of health and welfare of equines in Britain and to ensure that everyone

responsible for equine health and welfare understands and fulfils their duty of care. Further details of the strategy can be found at a dedicated website at www.equinehealthandwelfarestrategy.co.uk/home/.

On 26th March 2007, The Horse Trust, a UK-based equine charity dedicated to improving the welfare of the horse through education and science, launched a campaign to raise awareness about African Horse Sickness (AHS), one of the most feared and deadly infectious diseases of horses anywhere in the world. To complement this launch the Trust's Chief Executive, **Paul Jepson MRCVS**, has provided this report with an awareness article.

Also in this quarter's report, ahead of a possible spring and summer seasonal increase in diagnoses of equine influenza virus infection, **Adam Rash**, Horserace Betting Levy Board-funded graduate research technician on the AHT's Equine Influenza Surveillance Programme, outlines laboratory methods that are used to diagnose equine influenza infections in horses. This article will help inform readers about the laboratory methods that are applied to the samples they submit for investigation.

Although not occurring in the quarter being reported in this report, readers may be interested to learn that there have been cases of equine infectious anaemia (EIA) among non-Thoroughbred horses diagnosed in France in June and Germany in May. Contagious equine metritis (CEM) has also been confirmed in France, Switzerland and the United Kingdom around the same time. Further details will be provided in subsequent reports.

We reiterate that the views expressed in these focus articles are the authors' own and should not be interpreted as official statements of DEFRA, BEVA or the AHT.

Access to all of the equine disease surveillance reports can be made on a dedicated page on the Animal Health Trust website at http://www.aht.org.uk/equine_disease.html or via the BEVA and Defra websites:

http://www.beva.org.uk/
http://www.defra.gov.uk/animalh/diseases/vetsurveillance/species/horses/index.htm

We would remind readers and their colleagues that there is available on the AHT website a form for registration to receive free of charge reports regularly via e-mail as they are produced. The link for this registration form is available via http://www.aht.org.uk/equine_disease_registration.html.

Virology Disease Report for the first quarter of 2007

The results of virological testing for January to March 2007, are summarized in Table 1, and include data relating to equine viral arteritis virus from the Veterinary Laboratories Agency (VLA), Weybridge. The sample population for the VLA is different from that for the other contributing laboratories, as the VLA's tests are principally in relation to international trade. Of the 22 EVA VN positives detected by the VLA, 6 were among export samples, 2 from imports and the remainder were private requests. The 9 semen samples received for virus isolation were negative for EVA virus isolation after 3 passages in RK13 cell culture, and negative for EVA by the one-tube RT-PCR

Table 1: Diagnostic virology sample throughput and positive results for the first quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Serological Tests			
EVA ELISA	7005	830#	1
EVA VN	4168	293#	3
VLA EVA VN	715	22#	1
EHV-1/-4 CF test	765	12*	1
EHV-3 VN test	5	1*	1
ERV-1/-2 CF test	343	6*	1
Influenza HI test	348	1*	1
EIA (Coggins)	5599	0	2
Virus Detection			
EHV-1/-4 PCR	115	10	1
EHV-2/-5 PCR	0	0	1
Influenza NP ELISA	34	1	1
Influenza VI in eggs	1	1	1
EHV VI	320	12	1
EVA VI/ PCR	3	0	1
VLA EVA VI/ PCR	9	0	1
Rotavirus	76	22	6

VN = virus neutralisation, ELISA = enzyme-linked immunosorbent assay, CF = complement fixation,
HI = haemagglutination inhibition, PCR = polymerase chain reaction, NP = nucleoprotein, VI = virus isolation
EVA = equine viral arteritis, EHV = equine herpes virus, ERV = equine rhinovirus,
EIA = equine infectious anaemia, # = Seropositives include vaccinated stallions
* = Diagnosed positive on basis of seroconversion between paired sera

Virological Diagnoses for the First Quarter of 2007

EHV-1 Abortion

Eight individual cases of EHV-1 abortion were examined this quarter. All except one case were diagnosed by PCR on mixed fetal and placental tissues. One case was diagnosed by immunohistochemistry. Six of the cases were in vaccinated thoroughbred mares.

EHV-1 Neurological Disease
One case of neurological disease was seen in a welsh cob that developed severe ataxia and was euthanased. PCR on mixed tissues was positive for viral DNA.

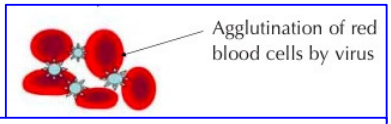
EHV-1 Respiratory Disease
A donkey that died of necrotizing tracheitis and bronchitis was diagnosed with EHV-1 on PCR.

EHV-3 Coital Exanthema
One case of coital exanthema was seen in a thoroughbred stallion. The diagnosis was made by paired serology that showed a high titre on both samples, and clinical signs. Breeding activities were halted and the infection has been contained.

Equine Influenza
A single case of influenza was seen in February in an unvaccinated horse in Surrey recently imported from the Netherlands. Diagnosis was made by virus isolation on nasopharyngeal swab and seroconversion on paired serology. Vaccinated in-contacts were apparently unaffected.

FOCUS ARTICLE: REVIEW OF EQUINE INFLUENZA DIAGNOSTIC TESTS

Adam Rash, Equine Influenza Surveillance Programme, Virology Unit, Animal Health Trust

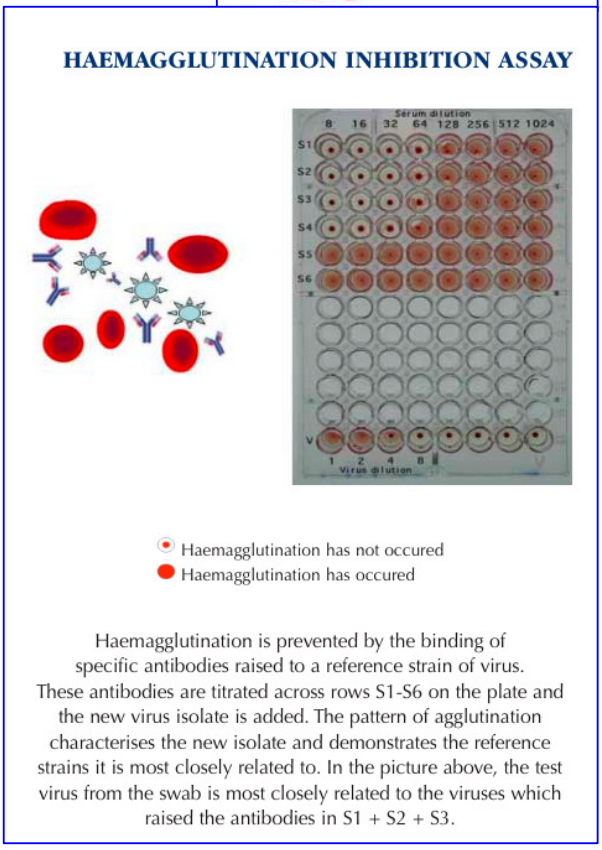


Serology

Influenza has the ability to bind to red blood cells via their haemagglutinin (HA) protein. This haemagglutination allows us to use a simple assay to check for the presence of the influenza virus.

Blood samples can be used in a variation of this assay called the **Haemagglutination Inhibition** (HI) assay. This assay not only allows us to determine levels of antibodies against equine influenza, but also to establish from which lineage the virus that infected the horse belongs to. Currently, three virus strains are used in the diagnostic HI assay, and they represent different regions of the equine influenza family.

Prague/56 is an H7N7 strain and can be used to distinguish between vaccination and natural infection as H7N7 viruses are no longer thought to be circulating but this strain is included in many vaccines. Miami/63 is the prototype H3N8 strain and Newmarket/2/93 is an H3N8 European lineage virus.



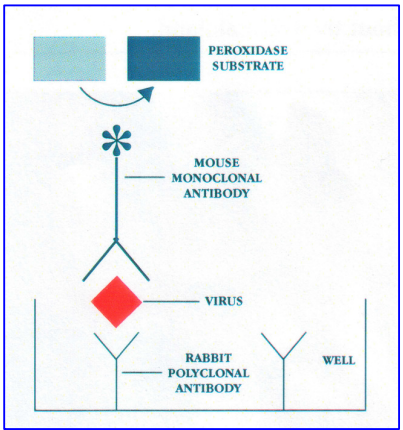
When samples arrive for diagnostic testing the blood is allowed to separate and the serum is removed. The serum is titrated across a v-bottomed plate in two fold dilutions from 1 in 8 to 1 in 1024. This is done on three separate plates, one for each of the virus strains used. Virus, at a standardised HA concentration, is added to each well and incubated with the serum for 30 minutes. A 1% suspension of chick red blood cells is added in equal volume to the serum-virus solution and the samples are incubated for a further 30 minutes before the plates are read.

When haemagglutination has occurred, the red blood cells remain in suspension, however if it has been inhibited the red blood cells sink to the bottom of the plate. When the plate is tilted to a 45° angle the blood in these wells will run in a line, whereas the blood in the haemagglutinated wells will not.

The HI titre for the sample is the least concentrated serum dilution that still inhibits haemagglutination. The higher the HI titre, the more that particular serum sample recognises that virus strain, and therefore the horse has been infected with a virus similar to that strain.

This assay allows us to monitor the type of virus strains currently circulating in the UK.

Nucleoprotein (NP) ELISA



The NP ELISA detects equine influenza virus (EIV) nucleoprotein in fluid extracted from a nasopharyngeal swab. An ELISA plate, consisting of six wells, is pre-coated with rabbit polyclonal antiserum raised against purified whole virus. Two wells are used for a negative control, two for a positive control and two for the sample being tested. The swab is squeezed using sterile forceps into a clean tube and then a small volume is pipetted into the wells of the ELISA plate. If EIV is present in the sample then the rabbit antiserum will bind to it.

After an incubation period the plate is washed before a horse-radish peroxidase labelled mouse monoclonal antibody is added. Whilst being incubated at 37℃ the mouse monoclonal antibody will bind to any virus that has been captured by the rabbit antiserum.

The plate is then washed again and a TMB peroxidase substrate is added. The enzyme label attached to the mouse monoclonal antibody acts on the peroxidase substrate resulting in a colour change. The intensity of this colour change indicates how much virus is present in the swab sample, and this intensity is read at 490nm using a colorimeter. A printout of the results will confirm whether the sample is positive or negative for equine influenza virus.

The remaining fluid from a positive swab sample can be used to inoculate embryonated hen's eggs to grow the virus to a titre that will allow further characterisation of the virus, both genetically and antigenically. This allows us to understand how the virus has evolved and to see how different it is from the current vaccine strains.

AWARENESS ARTICLE: AFRICAN HORSE SICKNESS – A POTENTIAL THREAT FOR THE UNITED KINGDOM?

Paul Jepson MRCVS, Chief Executive, The Horse Trust

The occurrence and rapid spread of Bluetongue in cattle and sheep in Belgium, Netherlands, Luxembourg, France and Germany in 2006 has highlighted the increased risk of types of insect borne disease spreading to the UK. The midge-borne African Horse Sickness (AHS) virus, closely related to Bluetongue virus, may strike the UK's equine population in the future, in which case high mortality might be expected.

As a result of the severity of the effects of African Horse sickness and its social and economic impact, it is listed as notifiable by the World Organisation for Animal Health (OIE) in Paris, by the European Commission in Brussels under Directive 92/25/EC and therefore also in UK legislation under the Infectious Diseases of Horses Order 1987. This means that, in practice, if there is any suspicion of AHS, a Defra Divisional Veterinary Manager must be notified immediately. Imported horses from countries outside the European Union are subjected to risk-based testing for AHS.

Clinical diagnosis

According to the OIE, the incubation period for AHS is usually 7-14 days, but may be as short as 2 days. The OIE also gives the following information about the disease:

- Subclinical form: fever (40-40.5°C) and general malaise for 1-2 days
- Subacute or cardiac form: fever (39-41°C), swelling of the supraorbital fossa, eyelids, facial tissues, neck, thorax, brisket and shoulders. Death usually within 1 week
- Acute respiratory form: fever (40-41°C), dyspnoea (difficulty breathing), spasmodic coughing, dilated nostrils with frothy fluid oozing out, redness of conjunctivae, death from anoxia (respiratory failure) within 1 week
- A mixed form (cardiac and pulmonary) occurs frequently: pulmonary signs of a mild nature that do not progress, oedematous swellings and effusions, death from cardiac failure, usually within 1 week
- In the majority of cases, the subclinical cardiac form is suddenly followed by marked dyspnoea and other signs typical of the pulmonary form
- A nervous form may occur, though it is rare

Lesions

- Interlobular respiratory form: oedema (fluid) of the lungs, hydropericardium (fluid around the heart), pleural effusion (fluid in the chest cavity), oedema of thoracic lymph nodes (swelling), petechial haemorrhages in pericardium (pin-point haemorrhages in the membrane surrounding the heart)
- Cardiac form: subcutaneous and intramuscular gelatinous oedema, epicardial and endocardial ecchymoses (bleeding into the tissues of the heart), myocarditis (inflammation of the heart muscle), haemorrhagic gastritis

Further information can be found on the OIE website at http://www.oie.int/eng/maladies/fiches/a_A110.htm

Transmission and risk to Europe

AHS virus is related to Bluetongue virus and is spread by the same Culicoides species of midge. In horses the mortality rate can be as high as 90%. In donkeys the mortality rate is much lower (about 10%) and there are concerns that donkeys and certain exotic species may act as subclinical carriers for a period of time following infection. Infected midges can be blown by the wind for more than 100km and transported long distances in farm vehicles.

There are multiple serotypes of AHS virus and the only vaccines currently available are live attenuated preparations manufactured in South Africa. These vaccines are not licensed for use in Europe, although they can be used as an emergency response when the disease has taken hold. Research institutes and vaccine manufacturers are already working to develop more effective and safe cattle and sheep vaccines for Bluetongue virus as it is anticipated that this disease could reach the UK in 2007. Similar research and development is urgently required for AHS.

AHS was diagnosed in Spain between 1987 and 1990 and in Portugal in 1989 but was eradicated using slaughter policies, movement restrictions, midge vector eradication and vaccination. Were AHS to break out in Europe again, under current vector and climate conditions it is probable that it would have a much better opportunity to establish itself - including in the UK.

Future awareness and action

The Horse Trust has recently launched a disease awareness campaign for AHS. Defra is already in the process of revising legislation on notifiable equine diseases and also contingency plans for measures to take in the event of an out break. A working group has been set up, initiated by the Horse Trust and involving Defra and others from the horse industry to look at how best Government and industry can work together to prepare for and manage any such outbreak. In particular this group is considering the difficulties that might be encountered and trying to provide options to prevent and resolve problems.

In 2007 The Horse Trust will spearhead:

- An education campaign to all horse owners to make them aware of the possibility of AHS striking the UK and the clinical signs associated with the disease;
- An information campaign throughout the equine veterinary profession to try and ensure early diagnosis;
- A research programme to evaluate the likely impact of the disease and to develop appropriate control measures in accordance with the aims of the Equine Health and Welfare Strategy.

Further information on the awareness campaign is available at http://www.horsetrust.org.uk/news/index.html

Bacteriology Disease Report for the first quarter 2007

A summary of the diagnostic bacteriology testing undertaken by different contributing laboratories is presented in Table 2. For contagious equine metritis (CEM) 12 of 28 HBLB approved laboratories contributed data.

VLA CEMO Data for the period January, February and March 2007

We are again pleased to include data relating to CEM testing from the Veterinary Laboratories Agency (VLA), in this quarterly report. The sample population for the VLA is different from that for the other contributing laboratories as the VLA tests are principally in relation to international trade.

Submissions for International Trade pre-export tests continue the upward trend with submission numbers up 3% when compared with the same quarter in 2006, although the number of swabs submitted was actually down by 13%. There were 5 tracing submissions involving 15 swabs from an incident that commenced in 2006 but carried into 2007 due to the prolonged treatment involved.

Table 2: Diagnostic bacteriology sample throughput and positive results for first quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
CEMO (HBLB)	11974	0	12
CEMO (VLA)	515	0	1
Strangles*	2231	341	13
Strangles PCR	458	166	1
Salmonellosis	404	36	10
MRSA	1555	22	5
Clostridium perfringens	19	2	1
Clostridium difficile (toxin by ELISA)	57	2	1
Cryptosporidium	11	0	2

CEMO = contagious equine metritis organism (*Taylorella equigenitalis*); HBLB = HBLB accredited laboratories; VLA = VLA reference laboratory**;** *Streptococcus equi; MRSA = meticillin resistant *Staphylococcus aureus.*

Of the 404 samples tested for *Salmonella* spp., 31 were sent to the VLA for testing and of these 26 were found to be positive and were typed. The other 10 positive samples were among 373 samples tested by other laboratories. Of the 26 typed strains there were 9 of *S.* typhimurium 56 variant; 3 each of *S.* typhimurium 104b and *S.* agama*;* 2 each of *S.* typhimurium 193 and one each of *S.* anatum*; S.* enteritidis*; S.* montevideo*; S.* typhimurium 195, 40, 41, U288, U302 and untyped.

Toxic and Parasitic Disease Report for the First Quarter of 2007

A summary of diagnostic toxicosis and parasitology testing undertaken by contributing laboratories is presented in Tables 3 and 4 respectively. Results are based on histopathologically confirmed evidence of disease only.

Table 3: Diagnostic toxicosis sample throughput and positive results for first quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Grass Sickness	9	5	3
Hepatic toxicoses	4	1	2

Table 4: Diagnostic parasitology sample throughput and positive results for the first quarter 2007

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Endoparasites			
Ascarids	882	16	5
Cyathostomes	895	145	6
Dictyocaulus	204	9	5
Strongyles	376	40	6
Tapeworms	411	22	5
Ectoparasites			
Lice	274	10	8
Mites	256	3	6
Ringworm	311	27	8
Dermatophilus	210	2	4

Report on *Post Mortem* Examinations for First Quarter 2007

East Anglia

Eighty four cases were examined this quarter and of these 65 were fetal deaths.
Twelve of the fetal deaths were associated with the umbilical cord being over long of twisted. One case had necrosis of the cervical pole of the allantochorion, one had a pedunculated allantoic cyst wrapped around the cord and another had hydroallantois although this was thought less significant than the long cord length. Eleven cases of fetal death had no definite cause of death identified. Among the proposed but unconfirmed reasons were; uterine infarcts (uterus not available for examination); *Streptococcus zooepidemicus* infection; a non infective still birth and fetal malpositioning leading to foaling trauma in second stage labour. There were five cases associated with assisted dystocia including one under general anaesthesia. All five were associated with fetal

hypoxia, with three having contracted fore limbs. Twelve cases of hypoxia, four of asphyxia were also reported. Nine cases of placental compromise included one premature placental separation, one 'red bag delivery' (inverted chorion presented), one placenta with poor chorionic villi possibly associated with endometrial compromise, five cases of placentitis of unknown cause and one placentitis due to pseudomonas infection were notified. Three other infective causes of fetal death included two with EHV-1 infection and one with *Streptococcus zooepidemicus* infection believed to have entered via the cervical star. There was a single case of chronic fetal diarrhoea where death was in second stage labour, although the primary cause of the premature delivery could not be determined. Other causes of fetal death reported included pleuritis, peritonitis, pneumonia, septicaemia and intussusception.

There were eighteen adult animals examined. Three separate deaths were due to cranial trauma affecting the skull. One case of neoplastic lung disease was seen in an aged broodmare, the primary mass was associated with the thyroid gland. One suspected case of cardiac arrest was seen in an elderly pony and one case of possible peracute equine dysautonomia (grass sickness) was diagnosed in a Welsh mountain pony. Two other cases of neoplasia and one case of endocarditis were seen. One case of sudden death was inconclusive. Three welfare cases were examined on behalf of the RSPCA. These included a severe infestation with cyathastomes leading to emaciation, haemorrhagic exudates in all body cavities, generalized oedema and severe typhocolitis. One case of verminous aneurisms in the cranial mesenteric artery associated with ascarid worms, with evidence also of typhocolitis and lice. The third case was an elderly pony with chronic bastard strangles with abscesses in the liver and lungs. Five cases were in mares that died peripartum with three suffering uterine artery haemorrhage, one developed small colon ischaemia post-foaling and one animal suffered a rectal tear at foaling.

Home Counties

Twenty five cases were examined this quarter.

These included a case of dystocia in which the mare and foal died after delivery under general anaesthesia. There were 17 cases that involved abdominal pathology including four cases of cyathastomiasis, three cases of gastric rupture, one case each of gastric squamous cell carcinoma with metastasis, grass sickness, small intestinal strangulation due to pedunculated lipoma, colonic torsion, peritonitis due to enterectomy breakdown, peritonitis due to perforating foreign body, end stage fibrosing cholangiohepatitis, glomerulonephropathy and disseminated thrombo-embolism, hypovolaemic intestinal shock of unknown aetiology and ulcerative colitis with laminitis. There were also three cases of abortion investigated. These were due to one case each of ascending bacterial placentitis, twinning and hydramnios (excess amniotic fluid) with presumed hydrallantois (excess allantoic fluid but allantochorion not submitted). The three remaining cases were one each of cranial mesenteric aneurysm (presumed post-parasitic), chronic laminitis and coxofemoral osteoarthritis, all among elderly ponies.

South West

Seven cases were examined this quarter.

There were three cases of gastrointestinal disease which included two cases of small intestinal infarction associated with pedunculated lipoma and one case of necrotic small intestine associated with strangulation in an internal hernia. There were two cases of neoplastic disease including a case of generalised lymphoma that involved cervical

muscle infiltration and a pathological fracture associated with a humeral osteosarcoma. The remaining two cases were a case of welfare neglect that suffered chronic hepatic toxicity and vascular parasitism and a case of micronodular cirrhosis of unknown aetiology.

Scotland

Eleven cases were examined this quarter.

These included five cases with abdominal pathology including strangulating lipoma, gastric rupture, acute grass sickness, intestinal necrosis and intussusception, two cases of limb fracture and one case each of laryngeal chondritis, endocardial cushion defect, post-operative mortality of undetermined cause foreign body associated pyothorax. Further details of selected cases are provided below.

An 8 month old Highland pony colt was presented with poor growth, recent weight loss, and tachypnoea. At post mortem examination, all four chambers of the heart were markedly enlarged. There was a 7 x 9 cm diameter ventricular and atrial septal defect. The right and left atrioventricular valves shared two cusps which bridged across the defect between the chambers in a figure of eight pattern. There was also marked dilatation and thinning of the pulmonary artery immediately proximal to the pulmonic valve and mild, diffuse pulmonary oedema.

The liver was very markedly enlarged and round-bordered. Throughout the parenchyma were multifocal to coalescing, irregular areas of pallor with dark red, congested areas between. Multiple lymph nodes were markedly enlarged. The lymphatic vessels throughout the mesentery were markedly dilated (up to 10mm diameter) and exuded lymph under pressure when sectioned.

The findings were suggestive of a congenital endocardial cushion defect. This had resulted in very marked changes of right and left-sided cardiac failure, including lymphangiectasis. It is possible that venous hypertension impaired recirculation of lymph via the thoracic duct.

A 15 day old standardbred foal was submitted for post mortem and the main findings were ventral cellulitis of the left mandibular region, pericardial, pleural and abdominal effusions, petechial haemorrhages of the endocardium, jejuno-jejunal intussusception, marked lymphodepletion of the thymus and spleen. It was felt that the intussusception was secondary to reduced gut motility or a late stage event. The diffuse vascular congestion and lymphodepletion were thought to reflect underlying septicaemia and/or immunosuppression. It is possible that the foal was immunosuppressed or colostrum deficient which allowed bacterial infection of a mandibular lesion with subsequent cellulitis, septicaemia and death. No inclusion bodies or bacteria were identified histologically and bacterial culture revealed a mixed bacterial population with no significant bacteria isolated. Prior antibiotic therapy and the delay between death and post mortem may have influenced the bacteriology results.

A 22 year old Highland cross pony mare was presented for post mortem with suspected colonic impaction. Main findings were severe gastric impaction, displaced colon and caecum, colonic impaction, severe small intestinal dilation, multifocal petichiation and ecchymotic haemorrhages and strangulated ileum secondary to a pedunculated lipoma.

One horse was presented to the referring vet with acute pyrexia and depression. It was treated with antimicrobials but was found dead 36 hours later. On post mortem

examination there was a unilateral pyothorax associated with a rose twig that had penetrated the serosal surface of the lung. It measured 30cm with 8 cm of this penetrating the pleural cavity. The end of the twig was in a large bronchus. The twig was surrounded by extensive necrosis and fibrosis, indicating it had been present longer than the given 48 hour history. There was a rose garden next to the horse's field, it is assumed the horse had tried to eat the twig. The thorns were directed cranially preventing it from being coughed up, although there was no history of coughing.

Northern Ireland

Twenty-four cases were examined during this quarter.

These included 12 aborted fetuses; in 7 of these no significant pathogens were detected. Leptospiral antigen was detected in two fetuses and *Corynebacterium spp*. and *Streptococcus zooepidemicus* were detected in one fetus each. A further fetus was jaundiced and hepatoparenchymal necrosis was seen histologically; however no significant pathogens were detected.

Intestinal torsion was seen in two yearlings, one of which also had high numbers of *Oxyuris equi* and cyathostome worms present. A 13-year-old stallion had periportal fibrosis, bile duct proliferation and megalocytosis histologically; these lesions are suggestive of ragwort toxicity. Another 28-year-old pony had hepatic fibrosis, but megalocytosis (which indicates ragwort toxicity) was not present in this case. A further 14-year-old pony had a moderate adult liver fluke infection.

A 10-year-old horse was euthanased due to progressive ataxia, hind leg weakness and in-coordination. No abnormalities were seen grossly, but a mild Wallerian degeneration was present histologically at all levels of the spinal cord. An undetected focal lesion in the caudal spinal cord was suspected.

A 3-year-old mare had a stomach impaction and an 11-year-old mare an impacted colon.

A 4-year-old donkey had a *Streptococcus zooepidemicus* septicaemia and a significant intestinal worm infection.

A foal, which had been born 36 hours previously, was jaundiced at post-mortem examination. Neonatal isoerythrolysis was suspected.

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Equine Veterinary Hospital, Arundel
Greenwood, Ellis and Partners
JSC Equine Laboratory
Liphook Equine Hospital
NationWide Laboratories
Royal Veterinary College, London
SAC Veterinary Services
Three Counties Equine Hospital, Kearns and Rea
University of Bristol, Department of Pathology
University of Edinburgh, Veterinary Pathology Unit
Veterinary Laboratories Agency
VetLab Services

All laboratories contributing to this report operate Quality Assurance schemes. These schemes differ between laboratories, however, all the contagious equine metritis testing reported was accredited by the Horserace Betting Levy Board with the exception of the VLA, which acts as the reference laboratory.

We would welcome feedback including contributions on focus articles and/or case reports to the following address:

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