



AHT / BEVA / DEFRA EQUINE QUARTERLY DISEASE SURVEILLANCE REPORT VOLUME: 7, No.3: JULY - SEPTEMBER 2010

Highlights in this issue:

- EIA situation in Europe
- EVA in the United Kingdom
- Update on Atypical Myopathy



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.



Animal *Health* Trust





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INTRODUCTION

Welcome to the third quarterly equine disease surveillance report for 2010 produced by Department of Environment, Food and Rural Affairs (Defra), British Equine Veterinary Association (BEVA) and the Animal Health Trust (AHT). 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.

NATIONAL DISEASE OCCURRENCE

Equine Infectious Anaemia (EIA)

Regarding the EIA outbreak reported on 7th September 2010 in Northumberland, England, involving one horse following legal importation from the Netherlands, all the horses in the premises (eleven in total) were subject to epidemiological investigation and screening; subsequently they all tested negative for EIA as of 10th September. The premises where the infected horse stood and the animals on it remain under restriction and are subject to proportionate level of checks from Animal Health authorities. The epidemiological enquiry is on-going. For more information about this outbreak, [click here](#) and [here](#).

With regards to the EIA outbreak reported in a horse in Devon, England on 11th September 2010, The other two horses on the premises were tested for evidence of infection; AGID (Coggin's) test results were negative. Two donkeys were located within 200m of the grazing used by the infected horse on the premises; these were clinically examined and found to be displaying no signs of disease. The donkeys were placed under restriction, sampled and tested using the AGID test; as of 21st September both donkeys tested negative. The premises and animals remain under restriction and are subject to proportionate level of checks from Animal Health authorities. The investigation into the origin of this case is ongoing. For more information about this outbreak, [click here](#) and [here](#).

Animal Health provides registered users with the latest news specific to exotic notifiable farm animal and/or equine disease outbreaks in Great Britain by means of alerts that can be sent to the users by a pre-recorded voice message, mobile text, fax and email. If you wish to subscribe to this service, please [click here](#).

Equine Viral Arteritis (EVA)

Following the EVA outbreak reported on 2nd August 2010 in a three year old stallion in Staffordshire, England, as of 12th November 2010 it was reported by Defra and the OIE that laboratory testing of a semen sample using both virus isolation and PCR confirmed that there had been no decrease in the EVA viral load in the semen. The EVA infected stallion has been gelded; this has been certified and officially notified. Restrictions have been lifted on 19th November 2010 and the event has been declared resolved. For more information about this outbreak, [click here](#) and [here](#).

Stop press: As of 8th December 2010, Defra has confirmed EVA in a Warmblood stallion imported from Holland in November 2009 and stabled in West Sussex, England. The stallion is currently under breeding restrictions and Animal Health (AH) has already started a full investigation in order to establish the likely origin of the infection, as well as any mares that may have been affected. Suspicion of disease in this stallion arose as a result of a pre-breeding test for EVA. The serum sample was subjected to a serum neutralisation



serology test with positive results on 2nd September 2010. There was no recorded evidence of past history of EVA vaccination to explain this result and the stallion was placed under immediate official restrictions. Confirmatory tests (virus isolation) were performed on a semen sample obtained on 22nd November 2010. The virus isolation test was confirmed positive on 7th December 2010. The disease is being controlled in line with the industry agreed Horserace Betting Levy Board (HBLB) Codes of Practice. For more information about this outbreak, [click here](#) and [here](#).

Introduction of new EU legislation for Equine Viral Arteritis (EVA) related to the Olympic and Paralympic equestrian events, London 2012

On 3rd November 2010, the Veterinary Imports Policy, Evidence Risk and Surveillance Policy Team at Defra (Department for Environment, Food and Rural Affairs) published new EU legislation on the temporary admission of certain male registered horses to participate in the Olympic and Paralympic equestrian events in London in 2012, and pre-test events. The new Commission Decision 2010/613/EU allows Member States to allow the temporary admission of uncastrated male horses which do not meet the requirement for Equine Viral Arteritis (EVA) provided for in Annex II of Commission Decision 92/260/EEC, provided they are accompanied by appropriate certification. Further certification for movements within the EU to the events and exit from the EU will also be required. The status of the horses cannot be amended from temporary to permanent entry and they must leave the EU without delay after the event. Once in the UK, the EVA seropositive horses will be subject to restrictions under the Equine Viral Arteritis Order 1995, which will prevent their use for breeding and/or semen collection

Equine Influenza (EI)

Equine influenza continues to be of importance within the United Kingdom. In this issue we report on several small outbreaks, mainly in unvaccinated horses.

These outbreaks have been reported by the new text alert service sponsored by Merial Animal Health, Tell-Tail. This service alerts practitioners to outbreaks of equine influenza in the UK by a text message to the practitioner's mobile phone. If you are an equine veterinary practitioner and would like to sign up for this scheme, please register [here](#). This service has also been offered to the members of the National Trainers Federation (NTF). If you would like to contact us regarding outbreaks of equine influenza virus or would like to sign up for our sentinel practice scheme, please send a message to: equiflunet@aht.org.uk or follow the link to www.equiflunet.org.uk for more information on equine influenza.

INTERNATIONAL DISEASE OCCURRENCE

Contagious Equine Metritis (CEM)

The total number of carrier stallions and mares directly associated with the 2008/09 CEM event in the USA remains unchanged at 23 stallions and five mares. All the carrier stallions and mares have been successfully treated and confirmed negative for *Taylorella equigenitalis*. Virtually all of the additional 977 exposed stallions and mares have also been determined culture negative for the bacterium. Epidemiologic evidence strongly suggests that the 2008/09 CEM event likely originated from a Norwegian Fjord stallion imported from Europe in 2000. A voluntary national stallion testing program for CEM has been instituted by the USDA. Of 226 stallions tested so far in 24 states, of which 100 were Quarter Horses, none have been found carriers of *T. equigenitalis*.



Follow up investigation and testing of an unrelated Arabian carrier stallion that was detected in California in May has failed to reveal any evidence of spread of *T. equigenitalis* to five exposed stallions and 18 mares exposed by AI or embryo transfer from a donor mare bred with semen from the carrier stallion. The latter has been successfully treated and confirmed free of *T. equigenitalis*.

On 12th July 2010 CEM was reported in Evora, Portugal. CEM was diagnosed by means of agent isolation on culture in 3 mares which stood on a premises in Evora, Portugal, with other 15 horses (one adult male, 2 adult females, 5 young males – between 6 and 24 months -, and 7 young females – between 6 and 24 months). This outbreak has been the first occurrence of this disease in Portugal. For more information about this outbreak [click here](#).

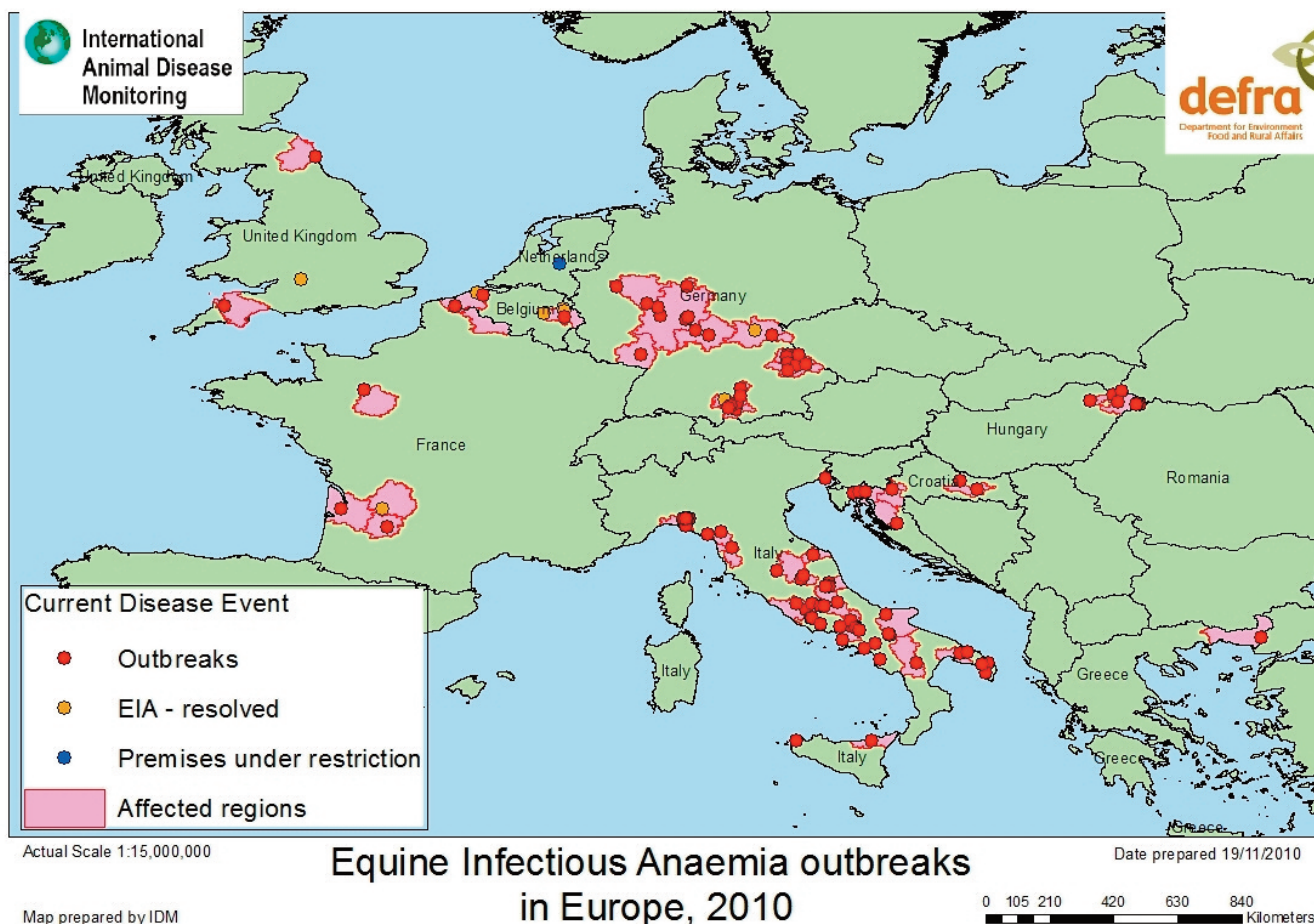
Equine Infectious Anaemia (EIA)

As previously reported, following the investigation launched on 20th January 2010 after the UK reported having confirmed the disease in two horses of a consignment from Romania via Belgium, EIA has been confirmed in seven single cases in Assebroek and Brugge (West Flanders), Warsage, Fumal, Charneux and La Reid (Liège), and Knesselaere (East Flanders). These seven outbreaks in Belgium are continuing as of 19th November 2010. All horses having been in contact with the horses from Romania are being traced, movement controls are applied in the farms and the animals are being tested for the disease. For more information, [click here](#).

Regarding the EIA situation in Germany, in summary, there are currently 12 ongoing EIA outbreaks with at least 194 horses involved. Of 12 positive animals, so far 6 have been euthanased. Restrictions including quarantine measures and movement controls are in place on the affected premises; epidemiological investigations are ongoing in all outbreaks. The sources of the outbreaks are illegal movements of horses. According to data published on 10th September 2010, a total number of 74 horses had been moved from Romania to the Federal State of "Hessen" in Germany, and of these 18 horses had been resold to other Federal States of Germany. For more information about these outbreaks, [click here](#).

With regards to the EIA situation in France, the previously reported outbreak in Prigonrieux (Dordogne) is continuing and has involved 21 susceptible horses and 2 cases up to date. The two outbreaks already reported in Lot et Garonne and in Nord on 25th August and 3rd September respectively are ongoing as well. Two further EIA outbreaks have been reported in France; on 29th September 2010, one case of EIA was reported in Sarthe in a crossbreed draught horse. This outbreak involved 37 susceptible and one EIA positive horse, which will be euthanased. The affected horse had not showed clinical signs and was tested as part of the epidemiological investigation involving horses imported from Romania via Belgium. Restrictions have been placed on the affected premises; all the horses have been isolated and are due to be screened as part of the investigation. Finally, on 18th October 2010 EIA has been reported in a single female French Trotter pleasure horse in Gironde, France. The affected horse, which was one of six horses on the premises, was not showing clinical signs and the diagnosis of EIA was made on the basis of laboratory confirmation of infection on 13th October 2010. The infected horse was euthanased and isolation and screening of the other animals on the premises is being conducted. Movement restrictions and an epidemiological investigation have been implemented. The animal was traced through the epidemiological investigations carried out following the EIA outbreak reported in Dordogne in March 2010. For more information about the EIA outbreaks in France, [click here and here](#).

The map below represents EIA outbreaks distribution in Europe since 1st January 2010.



Equine Infectious Anaemia outbreaks in Europe, 2010

Disclaimer: This map is reproduced with permission from Defra’s International Disease Monitoring team. It was prepared using official disease reports received during the period. It is primarily for visual purposes, do not necessarily reflect the true situation in every country and should not be regarded as definitive. This map was produced using ESRI Data and Maps CD (2002).

Equine Piroplasmosis

On 15th September the Réseau d’Epidémiologie-Surveillance en Pathologie Equine (RESPE) reported a case of Equine Piroplasmosis in a 10 year-old horse in Baden, Austria. The horse tested positive when it was screened during a Polo match. The in-contacts (three other horses) have tested negative. The affected horse was brought from Lombardy, Italy. An epidemiological investigation is ongoing.

Regarding the Equine Piroplasmosis (EP) outbreaks in the US, in the aftermath of the discovery of EP on a ranch in S. Texas in 2009, extensive tracing and testing of horses associated with this premises continues. The total number of horses confirmed seropositive principally for antibodies to *Theileria equi* currently stands at 410 out of 2,362 horses tested to date. The horses epidemiologically linked to the index premises are located in six states, Texas, Alabama, Louisiana, Indiana, N. Carolina and Tennessee. EP testing for entrance into sanctioned horse racing events is currently required in New Mexico, Texas, Oklahoma, Colorado and Louisiana. New *T. equi* seropositive horses have been identified in Texas, New Mexico, Georgia, Minnesota, Louisiana and N. Carolina, all of them Quarter Horses. Also, one TB racehorse has been found positive for *B. caballi* in Iowa. Epidemiological investigations and testing are continuing. Click here for more information about the EP situation in the US.



Eastern Equine Encephalomyelitis (EEE)

As of 2nd November 2010, the EEE overall national total in the USA is currently standing at 231 cases. Two additional cases were recorded in Florida (93), followed by Michigan (57), Mississippi (20), and Georgia (11 including 3 new cases), Indiana (10), New York (10), Alabama (8), N. Carolina (6), Massachusetts (4), Ohio (4) and 1-2 cases in each of Illinois, New Hampshire, New Jersey, S. Carolina, Texas, Virginia and Wisconsin.

West Nile Virus (WNV)

As of 9th September 2010 four outbreaks of WNV have been reported in Belize ([click here](#)). To date these outbreaks have involved 83 susceptible horses and 5 cases of which 3 have died. Interestingly, there is an outbreak of Venezuelan Equine Encephalomyelitis in one of the villages where WNV has been reported.

As previously reported, on 27th August 2010 WNV was reported for the first time in Greece ([click here](#) for more information). As of 4th November 2010 the number of WNV outbreaks in Greece has increased to 27. There are 559 susceptible horses and 30 cases of which 2 have died and another has been destroyed.

On 17th August 2010 16 outbreaks of WNV were reported in the Centre region of Morocco. Following these outbreaks, 8 other outbreaks were reported in the Centre and North-West regions involving a total of 175 susceptible horses and 25 cases (8 of them dead). As of 21st September the whole event (24 outbreaks) was declared resolved. For more information, [click here](#).

On 27th September 2010 the OIE has reported the first occurrence of West Nile Virus (WNV) in equids in Portugal. An outbreak involving a positive horse was reported in Lisboa e Vale do Tejo, near Lisbon. Restrictions were placed on the affected premises, where there was only one susceptible horse. The affected horse was humanely destroyed on welfare grounds. Investigations are ongoing. For more information about this outbreak, [click here](#).

On 4th October 2010 Pro-MED reported WNV in several regions in Russia. The affected regions are Volgograd Oblast, Rostov, Voronej, Astrakhan, Tcheliabinsk, Kalmykia and Krasnodar Krai. Up to 22nd September 2010 a total of 480 horses in these regions were diagnosed with WNV infection.

As reported in last quarter's issue, on 10th September 2010 the first occurrence of West Nile Virus (WNV) in equids was confirmed in Spain. As of 3rd November 2010 the number of WNV outbreaks in Spain has increased to 31. There are 845 susceptible horses and 39 cases of which two have died. For more information, [click here](#).

As of 2nd November 2010 the number of WNV cases overall in the USA in 2010 is 133. States recording additional cases were California (40), Florida (23), Pennsylvania (7) and Missouri (5). Totals for other states included Colorado (7), Indiana (6), Kentucky (6) Texas (6), Idaho (3), Louisiana (3), N. Dakota (3) and Utah (3), and 1-2 cases in each of Arizona, Georgia, Illinois, Iowa, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Nevada, New Jersey, N. Carolina, Ohio, Tennessee, Wisconsin and Wyoming.



DEFRA BUSINESS

EIA

The two UK premises affected by EIA remain under restrictions. The 90 day blood samples required to confirm premises freedom are due to be taken on or after 07 December 2010. If these are negative, the restrictions will be lifted. All equidae remaining under restrictions have been subject to proportionate risk based official checks throughout the period under restriction and no signs of clinical disease have been reported at any time. The epidemiology reports related to the EIA outbreaks are likely to be published in early/mid December.

EVA

Defra is currently working with BEVA and industry representatives to develop practical solutions to problems that arise when positive pre-breeding EVA serology test results are obtained from horses that have incomplete EVA vaccination histories.

African horse sickness regulations and control strategy

The African horse sickness (AHS) regulations that have been developed over the past two years in partnership with the AHS Working Group chaired by Paul Jepson have now been finalised. The AHS control strategy is being updated to reflect the regulations and it is expected that the regulations will come into effect in April 2011.

The Equine Core group

This year Defra have established a new Equine Core Group to advise Defra on the impact and implications for the equine industry of disease control measures proposed for outbreaks of exotic notifiable diseases. This is in line with similar groups that exist for other important species groups.

In the event of an exotic disease outbreaks that affect the equine industry, the Group will meet frequently (even daily) to discuss the immediate disease control measures to be applied. The Group has a key role in working alongside Government to act as the voice of the equine industry for critical decisions on disease control measures that are being proposed by Government during an outbreak. The Group also works with Defra to identify and apply lessons learned from previous disease incidents in developing existing policies, and provides invaluable industry knowledge and field information that may influence decision-making.

All parties have committed to close working, mutual trust and the sharing of information under Chatham House rules. The success of this working relationship is evident through the handling of the recent outbreaks of Equine Infectious Anaemia (EIA). This inclusive approach ensured that Defra reached decisions that reflected wherever possible the views of the equine sector.

Among other activities, Defra is working closely with the equine industry, primarily through the Core Group, to increase awareness exotic equine diseases, such as EIA, amongst private veterinary surgeons so that these are routinely included in their list of differential diagnoses. It is expected that this will ultimately lead to faster and more accurate reporting of suspect cases, and this is illustrated that the case of EIA in Devon was reported by a veterinary practitioner. In particular, Defra is working with the British Equine Veterinary Association (BEVA) on this.

The Core Group are also helping Defra to improve communications with the horse industry (see below).



Improving communications with the equine industry

A key issue identified by the Equine Core Group is the need for Defra to improve communications with the equine sector, especially during disease outbreaks and this has been demonstrated in recent cases of exotic disease in horses.

In response to a suggestion made by the Equine Core Group, Defra hosted a Communications Workshop in mid-November 2010 designed to improve existing channels of communication between government and the equine sector, both during and between outbreaks of exotic equine disease. The workshop included communications experts from the largest equine bodies, as well as Defra communications officials and journalists from the specialist equine press.

Focus articles

In this report we are pleased to include one focus article. Following the several cases of Atypical Myopathy in the south-west of England, Jo Ireland and Fatima Cruz from the AHT give an overview on the most relevant up to date information of this disease.

We reiterate that the views expressed in this focus article 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/foodfarm/farmanimal/diseases/vetsurveillance/reports/listing.htm>

We would remind readers and their colleagues that a form is available on the AHT website for registration to receive reports free of charge, via e-mail, on a quarterly basis. The link for this registration form is available via

http://www.aht.org.uk/equine_disease_registration.html.

VIROLOGY DISEASE REPORT FOR THE THIRD OF 2010

The results of virological testing for July to September 2010 are summarised in Table 1 and include data relating to Equine Viral Arteritis (EVA), Equine Infectious Anaemia (EIA) and West Nile Virus (WNV) 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 (EVA and EIA). VLA now provides testing for WNV as part of clinical work up of neurological cases on specific request and provided the local DVM has been informed.

TABLE 1: DIAGNOSTIC VIROLOGY SAMPLE THROUGHPUT AND POSITIVE RESULTS FOR THE THIRD QUARTER 2010

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Serological Tests			
EVA ELISA	571	11#	5
EVA VN	58	1#	3
VLA EVA VN	495	11#	1
EHV- 1/-4 CF test	553	10*	1
EHV-3 VN test	3	0	1
ERV-A/-B CF test	285	4*	1
Influenza HI test	435	10*	1
EIA (Coggins)	41	0	2
EIA ELISA	304	0	3
VLA EIA (Coggins)	1446	3	1
VLA WNV (PRNT)	1	0	1
Virus Detection			
EHV-1/-4 PCR	43	0	2
EHV-2/-5 PCR	16	4	1
Influenza NP ELISA**	308	6	1
Influenza Directigen	143	0	2
Influenza VI in eggs	0	0	1
EHV VI	135	6	1
EVA VI/PCR	0	0	1
VLA EVA VI/PCR	21	2	1
Rotavirus	50	9	8

ELISA = enzyme-linked immunosorbent assay, VN = virus neutralisation, VLA = Veterinary Laboratories Agency, CF = complement fixation, HI = haemagglutination inhibition, Coggins = agar gel immuno diffusion test, PCR = polymerase chain reaction, NP = nucleoprotein, VI = virus isolation, EVA = equine viral arteritis, EHV = equine herpes virus, ERV = equine rhinitis virus, EIA = equine infectious anaemia # = Seropositives include vaccinated stallions, * = Diagnosed positive on basis of seroconversion between paired sera ** = The relatively high number of NP ELISA tests performed is largely due to requirements for international equine movement. All horses travelling to Australia must now have 2 NP ELISA tests performed prior to travel. The figures above include tests performed for international trade purposes.



Of the 11 EVA VN positives detected by the VLA, 6 were export samples, 3 were serum samples from stallions for artificial insemination (AI) certification, and 2 samples were submitted for diagnosis from overseas. Of the 21 semen samples received for EVA testing two tested positive on virus isolation and RT-PCR; one of them relates to the EVA outbreak in Staffordshire whereas the second one was a positive stallion being investigated in South America that may have been responsible for the recent EVA outbreak this year in Argentina.

The 1446 agar gel immuno diffusion tests for EIA (AGID; Coggins) were conducted for international trade purposes. Three samples were positive (two of the positives were related to the two EIA outbreaks in Devon and Northumberland, respectively).

Virological Diagnoses for the Third Quarter of 2010

EHV-1 paralytic and respiratory disease

Following import from Southern Ireland on the 8th July, two donkeys in a group of seven started showing nasal discharge. Six days later, on 14th July, both donkeys presented hindlimb ataxia and in one case bladder paralysis, which resolved a week later. Serology by Complement Fixation (CF) test in these seven donkeys revealed high titres to EHV-1 and/or EHV-4; however all of them presented a high anticomplementary activity making the interpretation of the results difficult. EHV-1 could not be isolated from any of the affected donkeys at that time; however, the outbreak spread throughout the premises and several other donkeys presented respiratory signs. EHV-1 was isolated from a nasopharyngeal swab and also nasal discharge in a donkey with respiratory signs as of 8th September. Serological screening of the affected donkeys and the in-contacts revealed seroconversions to EHV-1 and/or EHV-4 in two cases (including the donkey which was positive by virus isolation) and high titres to EHV-1 and/or EHV-4 consistent with recent infection and a high anticomplementary activity in most of the in-contacts.

Equine Influenza

Six outbreaks of equine influenza (EI) were reported in this quarter.

Outbreak descriptions

As previously reported, on 15th July 2010 EI was diagnosed in a non-vaccinated pony in Nottinghamshire, UK. Diagnosis was confirmed by the Animal Health Trust on the basis of positive nucleoprotein (NP) ELISA on a nasopharyngeal swab. The affected pony showed typical clinical signs (harsh, dry cough and nasal discharge) and it was the only affected animal among a small group of horses. The rest of the horses were vaccinated for EI. The affected pony was a recent arrival on the yard from the north east of England having been imported from Ireland shortly before that.

On 12th August EI was confirmed in 2 non-vaccinated ponies in Nottinghamshire. Both ponies had recently arrived from sales and were showing clinical signs of pyrexia and cough. Diagnosis in both cases was confirmed by the Animal Health Trust on the basis of seroconversions to EIV H3N8 Miami '63 and EIV H3N8 Newmarket 2 '93 on paired serum samples by the haemagglutination inhibition (HI) test.

On 16th August EI was diagnosed in a non-vaccinated jenny in a yard in Worcestershire. Diagnosis was confirmed by the Animal Health Trust on the basis of positive NP ELISA on a nasopharyngeal swab. There



were 7 animals in the premises (2 non-vaccinated donkeys, 2 vaccinated horses and 3 ponies – one of them vaccinated and two of them non-vaccinated). Only the 2 vaccinated horses remained non-affected; clinical signs in the affected animals included pyrexia, nasal discharge and cough. The source of infection was believed to have been the 2 non-vaccinated ponies that arrived to the yard shortly before the onset of the outbreak; these ponies came from a dealer's yard and were showing signs when they first arrived on the premises but the NP ELISA was negative when tested along with the other cases.

On 24th August EI was diagnosed in a non-vaccinated 6 year-old horse in a livery yard-riding school in South Lanarkshire. Diagnosis was confirmed by the Animal Health Trust on the basis of positive NP ELISA on a nasopharyngeal swab. The affected horse arrived to the yard shortly before the onset of the outbreak and started showing clinical signs of pyrexia, cough and nasal discharge as of 22nd August. There were 30 other horses in the yard and none of them were affected. All the horses in the yard had an up to date vaccination history for EI. The affected horse had been in isolation with another horse since its arrival from a dealer's yard in South Lanarkshire; the horse was reported to be probably imported from Ireland.

On 1st September 2010 EI was diagnosed in a 5 year-old gelding in Hampshire. Diagnosis was confirmed by the Animal Health Trust on the basis of positive NP ELISA on a nasopharyngeal swab. There were 20 other horses in the premises, all of them with up to date EI vaccinations. The affected horse was a new arrival on the yard from a dealer's yard having recently been imported from France and had started EI primary vaccination as of 20th August. As of 6th September a direct in-contact (a vaccinated pony) tested positive by NP ELISA on a nasopharyngeal swab; however, several other horses in the yard (indirect in-contacts) tested negative.

On 3rd September 2010 EI was confirmed in a stallion in Cumbria in a small private yard with 4 other horses. The affected stallion, which had last been vaccinated in March 2009, did not have an up to date EI vaccination history was diagnosed by NP ELISA on a nasopharyngeal swab. Unfortunately, no isolate could be obtained from this outbreak.

Equine influenza virus characterisation

Genetic characterisation of the isolates obtained from the outbreaks in Nottinghamshire, Worcestershire, South Lanarkshire and Hampshire showed that all isolates belonged to Florida sublineage clade 2 of the American lineage of H3N8 equine influenza virus.

BACTERIOLOGY DISEASE REPORT FOR THE THIRD QUARTER 2010

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

VLA CEMO Data for the period July to September 2010

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 and/or outbreak investigations.

Strangles

Strangles remains endemic in the UK, especially among parts of the non-Thoroughbred horse population. Diagnoses are confirmed in the UK based on traditional culture of *S. equi* and qPCR on respiratory samples and/or seroconversion using a serological ELISA.

TABLE 2: DIAGNOSTIC BACTERIOLOGY SAMPLE THROUGHPUT AND POSITIVE RESULTS FOR THE THIRD QUARTER 2010

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
CEMO (HBLB)	864	0	28
CEMO (VLA)	707	0	1
<i>Klebsiella pneumoniae</i> #	838 ¹	5	28
<i>Pseudomonas aeruginosa</i>	835 ¹	8	28
Strangles* culture	1689	123	20
Strangles PCR	805	65	2
Strangles ELISA	1293	210	1
Salmonellosis	445	4	16
MRSA	359	5	12
<i>Clostridium perfringens</i>	111	7	8
<i>Clostridium difficile</i> (toxin by ELISA or immunochromatography)	89	5	8
Borrelia (by ELISA)	28	2	1
<i>Rhodococcus equi</i>	759	3	7
<i>Lawsonia intracellularis</i> **	24	6	4

CEMO = contagious equine metritis organism (*Taylorella equigenitalis*); HBLB = HBLB accredited laboratories; # =capsule type 1,2,5; VLA = VLA reference laboratory; **Streptococcus equi* subsp. *equi*; MRSA = methicillin resistant *Staphylococcus aureus*. ** *Lawsonia intracellularis* identified using PCR applied to faeces; 1 reproductive tract samples only

VLA *Salmonella* results

From the 3 strains typed by the VLA the serotypes reported were *S. Typhimurium*, *S. Ohio* and a strain that was included in serogroup B but could not be typed. Each of the 3 positive samples represents one incident. The following definition of an incident applies: "An incident comprises the first isolation and all subsequent isolations of the same serovar or serovar and phage/definitive type combination of a particular *Salmonella* from an animal, group of animals or their environment on a single premises, within a defined time period (usually 30 days)."

For more information from Defra about *Salmonella* in the UK, please click [here](#)



FOCUS ARTICLE: UPDATE ON ATYPICAL MYOPATHY

Jo Ireland, BVMS, Cert AVP(EM), MRCVS, Animal Health Trust; in collaboration with Fatima Cruz, DVM, MRCVS, MPhil, Animal Health Trust.

Introduction

Equine Atypical Myopathy (EAM) is an acute, severe rhabdomyolysis occurring in grazing horses. A frequently fatal myopathy or myoglobinuria of grazing horses has been reported sporadically in various parts of the world throughout the 20th century and was first recognized as a specific disease syndrome, atypical myopathy, following an outbreak in horses in Scotland. Over the previous decade, several outbreaks of the condition have been reported in Europe, and most recently an outbreak this autumn affecting several cases has been reported in the south-west part of England.

Epidemiology

In contrast to exertional rhabdomyolysis, EAM occurs independently of exercise; however some cases have been reported to have exercised immediately prior to the occurrence of clinical signs. EAM is a disease of horses kept mostly at pasture, either affecting individual animals or several horses within a group, and outbreaks can occur repeatedly on a property. Cases occur predominantly in spring and autumn and the higher incidence of cases during these seasons may be associated with particular unfavorable climatic conditions, which appear to play a role in the pathogenesis of EAM. Although it is difficult to identify specific meteorological conditions, cold, damp weather has frequently been associated with outbreaks.

While affected pastures have been variable, overgrazed pastures or poor quality grazing, particularly with poor natural drainage, appear to increase the risk of disease. Many affected fields contain and/or are bordered by trees or shrubs and the presence of fallen leaves or branches has been identified as a risk factor. Additionally, manure spreading on pastures has been shown to significantly increase risk of EAM.

The condition predominantly affects young animals; however, it has also been reported in adult horses. No sex or breed predisposition has been described, although to date, no cases of disease have been reported in donkeys. Normal or underweight body condition is associated with an increased risk of disease, with the majority of affected horses reported to be in good condition, and overweight animals appear at reduced risk. Preventive health care measures such as regular vaccination and anthelmintic administration appear to be protective.

Plant, bacterial and fungal toxins have all been considered as possible causal agents but the aetiology remains unclear. Other possible causes including drugs, environmental toxins, viruses and thyroid dysfunction have not been associated with EAM. Recent research has demonstrated the presence of *Clostridium sordellii*-specific lethal toxin (TcSL) in the skeletal muscle of affected horses, suggests that this toxin may play a role as trigger or even as the lethal factor in this disease. Possibly additional factors such as antioxidant deficient or toxic states may be involved; however the role of nutritional deficiencies, such as selenium or vitamin E deficiency, in the pathogenesis of this disease remains to be investigated.

Clinical Signs

The onset of EAM is acute, with the major clinical signs relating to acute postural and respiratory muscle rhabdomyolysis, although early presentations may be confused with colic or laminitis. Horses may be found dead or more frequently showing various clinical signs including reluctance to move, muscular weakness, stiffness, apparent sedation or depression, sweating, fine muscle tremors, myoglobinuria, congested mucous membranes, tachycardia, and tachypnoea with expiratory dyspnoea. Progression to lateral recumbency is often rapid, and is a poor prognostic indicator. Once signs of the syndrome are present, the prognosis is very poor whatever the treatment and case mortality has been reported



from 75% to almost 90%.

Diagnosis

A presumptive diagnosis of EAM is based on history, clinical signs, and laboratory findings. Marked elevations of serum muscle enzymes activities (creatinine kinase [CK], aspartate aminotransferase [AST] and lactate dehydrogenase [LDH]) confirm the presence of severe acute muscle damage. Confirmation of myoglobinuria is also useful in clinical diagnosis, but may be complicated by the increase in urine opacity which can interfere with several methods of urine analysis and many dipstick tests are not able to differentiate myoglobin from haemoglobin.

Confirmation of diagnosis is based on specific histological findings in the affected muscles (postural and respiratory muscles, and occasionally, cardiac muscle). As prolonged recumbency may induce histological muscle degeneration indistinguishable from the lesions of EAM, post mortem muscle samples should be obtained from sites that have not been compressed during recumbency.

Surveillance

In 2000, the University of Liege established a surveillance network: the atypical myopathy alert group (AMAG) (<http://www.myopathieatypique.be>). This group was created with the aim to disseminate information about this disease, gather information about cases all over Europe and disseminate outbreak alerts. Thanks to this surveillance network 600 cases have been recorded since autumn 2006 in several countries in Europe. Veterinary practitioners are encouraged to report cases to Dominique Votion (dominique.votion@ulg.ac.be) by filling in and sending both a clinical and an epidemiology questionnaire.

According to the AMAG, as of 26th November 2010, 39 clinical cases compatible with the diagnosis of atypical myopathy have been reported. These cases were recorded in Belgium (7 cases), France (22 cases), Germany (1 case), United Kingdom (3 cases in the south-west of England), The Netherlands (3 cases), Switzerland (1 case), Spain (1 case) and Czech Republic (1 case). In autumn 2009 the AMAG reported the largest clinical series ever encountered in Europe, with 371 cases identified and a survival percentage of 22%. Back then, 35 cases were reported from United Kingdom.

Prevention

Veterinary surgeons should be aware that new cases or outbreaks can be expected to occur in the spring, following autumnal outbreaks and should institute preventive measures to minimize the risk of disease. Young horses should not be grazed on high risk pastures during autumn and spring, particularly on previously affected premises. Ensuring appropriate preventive health care, management and pasture management practices is also advisable.

Where EAM is suspected, all co-grazing animals should be removed from the pasture and their serum muscle enzymes should be assessed. This may facilitate detection of subclinical cases, which should be monitored for several days and receive medical care where required.

TOXIC AND PARASITIC DISEASE REPORT FOR THE THIRD QUARTER 2010

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

Table 3: Diagnostic toxicosis sample throughput and positive results for the third quarter 2010

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Grass Sickness	21	15	2
Hepatic toxicoses	24	6	3
Atypical myopathy	1	0	1
Tetanus	1	1	1

Table 4: Diagnostic parasitology sample throughput and positive results for the third quarter 2010

	Number of Samples Tested	Number Positive	Number of Contributing Laboratories
Endoparasites			
Ascarids	2215	57	16
Cyathostomes	1382	426	13
Dictyocaulus	1013	6	10
Strongyles	3128	550	22
Tapeworms (ELISA based testing)*	15	12	4
Tapeworms (Faecal exam)	2152	27	11
Trichostrongylus	17	6	1
Strongyloides	1103	57	13
<i>Oxyuris equi</i>	196	9	6
Fasciola	127	15	6
Coccidia	223	5	5
Cryptosporidia	5	0	1
VLA <i>Theileria equi</i> (CFT)*	339	4	1
VLA <i>Theileria equi</i> (IFAT)**	801	35	1
VLA <i>Theileria equi</i> (cELISA)***	279	27	1
VLA <i>Babesia caballi</i> (CFT)*	339	1	1
VLA <i>Babesia caballi</i> (IFAT)**	797	22	1
VLA <i>Babesia caballi</i> (cELISA)***	279	3	1
Ectoparasites			
Mites	23	0	1
Lice	346	6	15
Ringworm	608	165	21
Dermatophilus	301	22	11
Candida	48	1	2

*Complement Fixation Test; CFT suspect/positive samples are tested in IFAT test

Indirect Fluorescent Antibody Test; *competitive Enzyme-linked immunosorbent assay; positive cELISA results are not undergoing confirmatory testing

GRASS SICKNESS SURVEILLANCE DATA (WWW.EQUINEGRASSSICKNESS.CO.UK):

A total of eighteen equine grass sickness cases have been reported for the third quarter (July to September 2010), making a total of seventy-six reports in 2010. The type of grass sickness was reported for seventeen cases with twelve acute cases (70.6%), three subacute cases (17.6%) and two chronic cases (11.8%). One horse died naturally, fourteen cases were euthanased and one chronic case has survived to date. Diagnostic information was not available for three cases, and where reported, the majority of cases (n=9/15; 60%) were diagnosed based on clinical signs alone. Four cases (26.7%) underwent surgery, three of which were diagnosed by biopsy examination and a further two cases (13.3%) were diagnosed by post-mortem examination.

The location of seventeen cases was reported, with nine cases (52.9%) reported from England, six (35.3%) from Scotland and two (11.8%) from Wales.

Of the affected horses 41.2% were geldings (n=7), 47.1% were mares (n=8), 11.8% were stallions (n=2) and sex was not recoded for one case. The median age of affected horses was 7 years (range 1 – 24 years), and mean age was 9.7 years. The majority of horses were purebreds (n=11, 61.1%) and the remaining 38.9% (n=7) were crossbreds.

It should be noted that the grass sickness surveillance scheme receives data from a wider population in comparison to the data presented in Table 3 and different diagnostic criteria were used. For more information about the grass sickness surveillance please refer to previous reports published in Vol.4 No.2 and Vol.2 No.4.



REPORT ON POST-MORTEM EXAMINATIONS FOR THE THIRD QUARTER 2010

East Anglia

A total of 41 cases were examined including 14 aborted fetuses.

Of the aborted fetuses examined this quarter, umbilical cord torsion was suspected as the precipitating cause in 10 of 14 cases. A bacterial ascending placentitis was found to be the cause of one abortion whereas haemoabdomen and internal haemorrhage secondary to fetal trauma was confirmed in an aborted fetus. No definitive cause was determined for one case of abortion, however infectious agents were excluded. Finally, multifocal placental mineralisation was found to be the most likely cause of abortion in a mare.

There were two cases of neonatal death reported in this quarter. Both cases were associated with sepsis; in one of them a Rhodococcal abscess was found in the abdomen whereas in the other case gastric rupture led to septic shock and death.

Four cases were examined following neurological disease. The first case presented a Wallerian degeneration of the motor tracts of the spinal cord. The second case showed signs of Wobbler syndrome and it was euthanased; following post-mortem examination a synovial cyst was found to cause compression of the spinal cord. The third case, a zebra foal, was found laid out in a sand yard. Post-mortem examination showed several vertebrae fractures in the thoraco-lumbar region. The fourth case was diagnosed with Equine Degenerative Encephalomyelopathy and was also found to be affected by a pheochromocytoma.

Four horses were examined following gastrointestinal disease, causes of death were as follows: a case of diaphragmatic tear with small intestinal herniation and strangulation, a case of colon torsion, a case of enteritis and finally a case of gastric rupture.

There were five respiratory cases reported. Following post-mortem examination and histology a horse was diagnosed with a pulmonary artery thrombosis. Three cases were diagnosed with *Rhodococcus equi* infection; one of them presented thoracic and mesenteric abscessation. The fifth case was a donkey foal which presented a mild multifocal, lymphohistiocytic, broncho-interstitial pneumonia. In this fifth case EHV was not excluded due to the lack of samples for virology investigation.

Post mortem examination and histology of a horse revealed congestive heart failure.

The four musculoskeletal cases reported in this quarter include a case of laminitis following toxic enterocolitis and three cases of trauma.

Two cases with hepatic disease showing neurological signs were diagnosed of hepatic encephalopathy; in one of these two cases the most likely cause was found to be ragwort poisoning.

Other cases reported include four welfare/neglect cases (two of them presented with laminitis whereas the other two were diagnosed with ragwort poisoning) and a case in which the cause of death could not be confirmed.



Home Counties

Fourteen cases were examined in this quarter.

One neurological case was reported in this quarter; following collision with a fence the case presented head and eyes trauma.

The five cases of gastrointestinal disease reported include a case of diarrhoea and gram-negative enteritis in which *Salmonella* was suspected but was not cultured, a case of bacterial ileitis in which *Salmonella* was isolated, a case of stomach rupture, a case of colic that was euthanased and finally a case of colic in with post-mortem examination revealed a pedunculated lipoma.

Neoplasia cases include a horse that presented a squamous cell carcinoma, a case of vascular endothelial tumour and a case of disseminated lymphosarcoma.

Three musculoskeletal cases were reported; the causes of death reported after a post-mortem examination are as follows: chronic laminitis (in a neglect case), multiple fractures in the pelvis, and finally poliartthritis.

A horse with hepatic disease was diagnosed of hepatic encephalopathy.

The last case reported in this quarter was a case that was euthanased due to a loss of condition. In this case a cause of death could not be identified.

South West

Eight cases were examined in this quarter.

A case of abortion was reported in this quarter, the cause was most likely an umbilical cord torsion leading to vascular compromise.

Two cases were examined following gastrointestinal disease. In one of them toxæmia was found to be the cause of death following an impaction surgery. In the second case, post-mortem examination revealed a mesenteric tear with displacement and strangulation of small intestine.

Following gross post-mortem examination and histopathology a small cell lymphoma of the abdominal organs was found in a donkey.

A case of musculoskeletal disease was reported; post-mortem examination revealed an acetabular fracture with rupture of the teres ligament and degenerative joint disease.

In a donkey with hepatic disease gross post-mortem examination and histopathology revealed hepatic lipidosis with hyperlipaemia.

Two further cases were reported although at the time of this report no definitive cause was found for both deaths.



Northern England

Three cases were examined in this quarter.

One case of acute aspiration pneumonia and asphyxiation secondary to choke was reported in this quarter.

Two musculoskeletal cases were reported; following post-mortem examination a pedal osteitis was confirmed in the first case whereas the second case was diagnosed of tarsocrural sepsis.

West Midlands

Two cases were examined in this quarter.

Post-mortem examination in one case following a history of non responsive diarrhoea revealed a severe lymphoplasmacytic enteritis.

The second case was euthanased following a large hole diagnosed by ultrasound in the interventricular septum of the heart. This was confirmed by post-mortem examination.

Scotland

29 post-mortem examinations were reported in this quarter.

A seven-year-old show pony mare was presented for post-mortem examination following a history of neurological signs, which initially presented as vestibular/cerebellar dysfunction, and progressed to seizures which were ultimately non-responsive to treatment. Gross findings were inconclusive; there was mild leptomenigeal congestion, and signs of trauma relating to the seizures. Histopathology of the brain and spinal cord revealed mild to moderate, diffuse, non-suppurative meningoencephalomyelitis, with malacia and astrogliosis. There was mild multifocal Wallerian like degeneration within the spinal cord. Serology for Louping-ill and West Nile virus were negative. The cause of the meningoencephalomyelitis remains unknown. Other neurological cases include a case of anaesthetic-induced myelomalacia.

A three and a half month old thoroughbred filly was presented for post-mortem examination with a four-day history of lethargy and coughing. Clinically there was notable expiratory dyspnoea with crackles and wheezes on auscultation of the thorax. Thoracic radiographs suggested a bronchointerstitial pneumonia. A trans-tracheal wash detected septic neutrophilic inflammation. At necropsy examination the lungs were heavy, diffusely firm to rubbery, and mottled pale pink to cream. On cut section, small to moderate amounts of brown mucus containing white to off white flecks oozed from the small and medium sized bronchi. Sections of lung from all regions floated in formalin. The tracheo-bronchial lymph nodes were moderately enlarged, and mottled off white and dark red on cut section. Histologically there was a severe, multifocal to regionally extensive, subacute, catarrhal bronchointerstitial pneumonia. There was also marked to moderate lymphoid depletion involving the thymus, tracheo-bronchial and mesenteric lymph nodes, and jejunal Peyer's patches. There was moderate to severe, centrilobular and midzonal hepatic fatty change with single cell necrosis (changes secondary to hypoxia). No aetiological agents were identified.

A four week old donkey colt was presented following a short history of diarrhoea and terminal collapse. This was the second foal from a group of three to have been euthanased within a seven day period. The skeletal



musculature and diaphragm. In addition there was moderate subacute multifocal renal tubular necrosis. The changes were considered to be consistent with a diagnosis of nutritional myopathy, although samples of liver were submitted for vitamin E and selenium analysis and results were within normal limits.

A 14-year-old Irish draft gelding was presented for post-mortem examination following a three month history of coughing, lethargy, and nasal discharge. The cough and nasal discharge had responded to antibiotics, however the animal had remained lethargic. More recently the horse had suffered minor right-sided epistaxis, with clinically evident bilateral jugular distension and preputial oedema. On presentation to the equine hospital clinical examination revealed atrial fibrillation, a grade 5/6 left sided heart murmur associated with the mitral valve, and a grade 3 to 4/6 right-sided murmur associated with the tricuspid valve. There was moderate oedema of the subcutaneous tissues over the thorax and ventral neck, and of the bronchial lymph nodes, and the pericardium contained approximately 200ml of translucent yellow fluid. The heart was rounded, and both left and right ventricles were thin-walled and flaccid. There was an irregular area of pale yellow to white discolouration of the wall of the right atrial appendage. The left atrial endocardium was focally mildly thickened with a roughened appearance. The liver was dark tan with a nutmeg pattern, mildly rounded borders, and blood oozed from the cut surface. The abdominal and mesenteric lymphatics were markedly dilated by clear fluid, and the mesenteric lymph nodes were enlarged and wet. A diagnosis of congestive heart failure was made based on the gross findings. Histologically there was moderate myocardial fibrosis and fatty replacement of the right atrial wall, and mild fatty degeneration of the left atrial myocardium.

Gastrointestinal cases reported include include three cases of grass sickness, two cases of small intestinal strangulation, a case of small intestinal ischaemia (possible torsion), a case of gastric impaction and rupture, two cases of rectal rupture and one case of right dorsal displacement of the colon.

Two neoplasia cases were reported in this quarter: a hepatic tumour and a malignant melanoma.

Musculoskeletal cases reported include a fracture of the second cervical vertebra, a case of atypical myopathy (confirmed by histology), a deep digital flexor tendon injury, a tibia fracture and a case of chronic fetlock arthritis.

Other cases reported were a case of mitral valve insufficiency due to valvular dysplasia, a case of hepatopathy due to ragwort poisoning, a case of bladder rupture with subsequent peritonitis and a case of welfare/neglect in a donkey. Three other diagnoses were recorded as open.

Biopsy submissions

18 biopsy samples were submitted. Three were samples of muscle, with diagnoses of myositis, malignant hyperthermia, and an open diagnosis in one case. Other diagnoses included eosinophilic dermatitis, two cases of grass sickness, ocular squamous cell carcinoma, preputial fibroma, toxic hepatopathy, hepatitis, pituitary adenoma, arytenoiditis, and a fibro-osseous tumour arising from the gingiva. The remaining five cases had an open diagnosis.



Northern Ireland

Eight post-mortem examinations were examined in this quarter.

An eleven-year-old male horse which had reared up and fell over backwards 48 hours prior to euthanasia presented a fracture of the last sacral vertebra with haemorrhage in.

Significant Strongyloides worm burdens were detected in two cases. 15,300 Strongyloides were detected in the small intestine of an eight week-old donkey foal. 111,600 Strongyloides eggs per gram were detected in the caecal contents of a foal that died 48 hours after the onset of diarrhoea. Mild hepatitis was also detected histologically.

Large numbers of cyathostomes and tapeworms were found in the intestines of a mare that was submitted for post-mortem examination after having reportedly being found in a ditch over 48 hours previously. The carcass was very autolysed. There were also several lacerations on the left carpus.

A nine-year-old horse died 24 hours after it had been moved to new pasture. Post-mortem findings included distension of the caecum with a large quantity of fluid content and the colon contained a large volume of grass. Other gastrointestinal cases reported include a seven-year-old stallion which had presented with colic and presented a torsion of the large intestine; and a six-year-old male horse that was euthanased due to severe colic and presented a 20 cm tear in the stomach. In this case, the stomach was dilated and filled with dry ingesta and there was secondary peritonitis.

Finally, a three-year-old mare which died suddenly was too autolysed for meaningful post-mortem examination.



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We would welcome feedback including contributions on focus articles
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