Fructans and starch are not responsible for most cases of laminitis, Dr Teresa Hollands told delegates at the Laminitis Awareness 2010 seminar.

Most cases of laminitis occur when horses are eating grass. Pasture associated laminitis accounts for 66% of cases occurring in the UK. But what causes the laminitis?

Experiments have shown that giving large meals of starch or fructans can cause laminitis. Large amounts of these carbohydrates suddenly arriving in the horse’s large intestine disrupt the normal population of bacteria in the gut, leading to a cascade of inflammatory and toxic events.

However, Dr Hollands, nutritionist at Dodson and Horrell, explained that this process is unlikely to be involved in the majority of cases of pasture-associated laminitis.

Firstly, grass contains little starch. Of the pasture plants commonly found in the UK, only clover has significant amounts of starch. Grasses store glucose that they can’t use straight away as fructans.

It has been shown that laminitis can be induced by giving a large bolus of fructan (5g-12.5g fructan/kg body weight). That’s about 3.75kg fructan for a 500kg horse.

How much fructan would a horse eat when grazing? Grass contains higher levels of fructan during the winter. Mixed pasture might contain 150g fructan/kg dry matter of grass in the winter (compared with 6.6g/kg in the summer). If a 500kg horse eats an amount of grass equivalent to 2.5% of his body weight, (12.5kg), his total intake of fructans would be about 1.9kg.

So the full daily intake falls short of the levels that have been shown to cause laminitis. And what’s more, as horses are “trickle feeders”, that fructan intake is spread out over 24 hours. So even in the winter when the fructan levels in the grass are highest, the horse is only likely to eat something like 50g fructan/hour. In the summer the figure is likely to be about 5g fructan an hour - a thousand times less than the amount needed to cause laminitis.

What’s more, recent work has shown that fructans are fermented in the small intestine, and so are even less likely to reach the hindgut in sufficient quantities to cause food-induced laminitis.

So how does grass cause laminitis?

“We need to move away from thinking about individual components of the diet “ Dr Hollands suggested. “In the end it is the calories that are the main risk factor.”

“Grass provides more than enough calories for most horses in light work.”

She explained that recent work with World Horse Welfare and Napier University used alkanes to measure grass intake. Every day, some horses ate an amount of grass equivalent to 5% of their body weight. Some individuals increased their body weight by 4% a week.

“So you can see that grass easily provides horses with excess calories,” she said “ leading to gradual accumulation of fat. Excess calories over time equals fat. Not all fat is the same.”

She explained that research had shown that some adipose (fat) tissue is metabolically active. The fat cells
(adipocytes) release numerous biologically active substances (adipocytokines), which affect glucose and fat metabolism. When present in excess they can lead to insulin resistance, which in turn can result in laminitis.

“The slow insidious eating of excess grass over years is the problem; not the grass they ate today. People get insulin resistance and diabetes because they have been on a bad diet for years, not because they ate a doughnut today!”

What can you do to prevent laminitis associated with insulin resistance?

First you need to reduce the fat. Give thirty minutes exercise daily with a heart rate of 80 beats per minute. (“Turnout in the paddock is not enough” she says). Accept that the horse or pony will lose weight (fat) over the winter. Indeed encourage him to do so by using lightweight rugs only - so that he burns fat to keep warm.

Do not starve the horse. Maintain the bulk intake (at 2.5% of body weight) otherwise he will be prone to developing stereotypies or gastric ulcers. But reduce the calorie intake - soak the hay for 12 hours or feed oat or barley straw.

Make sure horses do not get too much grass. Consider using a muzzle; increase the number of horses (and /or cattle and sheep) on the pasture. It’s important to feed a balanced diet. Make sure the horses receive adequate proteins, minerals and vitamins by feeding a low calorie commercial feed balancer.

The solution is to reduce obesity, ensure nutrition is optimal, and increase exercise.

For more information see: http://www.dodsonandhorrell.com/help-advice/dh-research.html

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### Benefit of exercise on insulin sensitivity

Unless dietary restriction below maintenance energy requirements is also employed, moderate exercise on its own is not enough to counter insulin resistance in obese or overweight horses, according to research published in the American Journal of Veterinary Research.

Dr Rebecca Carter and colleagues at Virginia Tech examined the effects of exercise training alone on overweight or obese, insulin-resistant horses. Feed intake was limited during the study to 100% of maintenance energy requirements.

Twelve Arabian or part-bred Arabian geldings took part in the study. All had body condition score ≥7 (where 1 is emaciated and 9 obese.)

Eight horses were exercised. They followed a low intensity exercise program for 4 weeks followed by higher intensity exercise for a further 4 weeks. (See table below for details) Finally they had two weeks without exercise (detraining). A control group of four horses received no structured exercise.

The researchers found that the horses’ body weight had fallen by 2% following the low intensity exercise and by a similar amount after the 4 weeks of higher intensity exercise. Compared with pre- exercise values, the estimated fat mass fell by 21% after the light exercise and by 34% after higher intensity exercise.

However, about half of the body weight lost during the exercise stages was put back on again within the two weeks of detraining with no exercise.

Despite the weight loss, the researchers found no improvement in insulin sensitivity, when measured two days after their last exercise session. This indicates that although there may be improvements in insulin sensitivity during exercise or up to 24 hours after an exercise session (as has been shown in previous research), there may be no prolonged training effect of exercise on insulin sensitivity in overweight/obese horses.

They measured a number of variables including glucose, triglyceride, insulin, leptin, and nonesterified fatty acids (NEFAs). Frequently sampled IV glucose tolerance tests were also performed. The researchers found no significant difference between the exercised and control groups throughout the study.

They conclude that a more pronounced reduction in adiposity, or a higher volume, frequency or intensity of exercise training may be needed to enhance insulin sensitivity in overweight or obese, insulin-resistant horses.

Dr Carter adds ”even though our study did not show long-term training effects of exercise, there still are probably improvements in insulin sensitivity during and shortly after an exercise session. Therefore, ROUTINE exercise (every day) may be beneficial for improving insulin sensitivity.”

For more details see:


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<th>Low intensity exercise regime:</th>
<th>On a horse exerciser, 4 times a week:</th>
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<td>10 minutes walking (at 1.1m/s)</td>
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<td>+ 30 mins trotting (2.5m/s)</td>
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<th>Higher intensity exercise regime:</th>
<th>On a horse exerciser, 2 times a week:</th>
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<td>+20 mins cantering (6.3m/s on a 3° incline)</td>
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Atypical myopathy - possible cause found

Equine Atypical Myopathy (EAM) is an emerging disease of horses, which usually results in death.

It tends to affect young horses up to three years old (especially those about 18 months old). Horses that are in poor condition and not in regular work seem to be more at risk of the disease, as do those that have not been vaccinated or dewormed.

The last few months of 2009, Western Europe experienced the largest ever series of cases of the disease.

The last few months of 2009 saw the highest number of cases ever recorded in Western Europe, according to the Atypical Myopathy Alert Group. So far in 2010, 30 suspected cases had been reported to the University of Liege, including 23 in France. Up to 20th April

So far the cause is not known. Analysis of records of clinical cases suggest that the most likely cause is a toxin (from a plant, fungus or bacterium.)

Now researchers at the University of Bern, Switzerland, have identified a possible culprit.

Dr Lucia Unger-Torroledo and others in the Equine Clinic, together with colleagues from the Departments of Anatomy and Veterinary Bacteriology, have found evidence to implicate a bacterial toxin.

They investigated the possibility that the lethal toxin of Clostridium sordellii was involved. This toxin is known to cause severe muscle damage in mice.

The scientists concluded that there is evidence that the lethal toxin of Clostridium sordellii plays a role, either as a trigger, or even as a lethal factor, in Atypical Myopathy.

The work has been submitted for publication in the scientific journal Veterinary Microbiology, and is currently available on line. An abstract is available on PubMed.

For more details see:

Lethal toxin of Clostridium sordellii is associated with fatal equine atypical myopathy.

A minimally invasive technique using a laser can be an effective method of treating some urinary calculi in horses, according to a recent report.

Normal equine urine contains many calcium carbonate crystals. Despite that, the formation of stones ("calculi") in the urinary tract of horses is not common. Calculi can form anywhere in the urinary tract, but are most often seen in the bladder ("urocystoliths") or urethra ("urethroliths").

Treatment options include surgical removal, which may require general anaesthesia and carry the risk of complications - in particular peritonitis. Other methods include disrupting the calculi with shock waves or laser.

Researchers at the Virginia-Maryland Regional College of Veterinary Medicine and the School of Veterinary Medicine at the University of California, Davis have described a technique using laser lithotripsy directed through a flexible endoscope.

Lasers have been used before to break up urinary calculi. Although it is relatively easy to access the mare’s bladder, it is a more difficult procedure in the gelding because of the length of the urethra. In the past it has been necessary to open into the urethra below the anus to gain access to gelding’s urethra.

But using an endoscope to transmit the laser beam means that the procedure can be carried out without the need for epidural or local analgesia.

An optical fibre is passed through the biopsy channel of the endoscope. This is used to direct the beam from the 20W Holmium: Yttrium Aluminum Garnet laser onto the bladder stone.

The surgeon sweeps the fibre across the surface of the urolith to produce a crater or groove until eventually a fragment breaks off. This process is repeated as many times as necessary until the remaining pieces of urolith are small enough to pass out through the urethra.

Larger fragments are removed by grasping them with a wire basket passed through the endoscope. Smaller fragments are flushed out.

The clinicians make sure they can always see the tip of the optical fibre when the laser is activated so as to prevent it coming in contact with the bladder wall and causing accidental damage.

The report, published in the Journal of Veterinary Internal Medicine, carries details of seven cases of urinary calculi that were treated using laser lithotripsy. In all cases the procedure was performed by Dr David C Grant of the Virginia-Maryland Regional College of Veterinary Medicine.

Successful cases took between 101 to 150 minutes to complete.

All uroliths in this series of cases were composed of calcium carbonate.

There were no serious complications directly related to the laser lithotripsy procedure. Two horses had small burns of the inner lining of the bladder. These were superficial, and did not cause detectable signs. On one occasion the tip of the optical fibre broke off and had to be retrieved from within the bladder using forceps passed through the endoscope’s biopsy channel.

The procedure was not successful in two cases. The authors suggest that if no progress is made within the first 30 minutes the case will have to be managed by other means.

“The uroliths in which only small pieces can be dislodged or in which only holes can be made in the surface of the urolith - are not suitable for management by laser lithotripsy “

The technique was successful for removing all uroliths and fragments in five of seven cases. The authors concluded that laser lithotripsy combined with lavage and retrieval of larger fragments using the endoscope was a safe procedure.

For more details see:

Holmium: YAG Laser lithotripsy for urolithiasis in horses.
DC Grant, JL Westropp, R Shiraki, AL Ruby.
Horses can be a source of antibiotic-resistant bacteria, presenting a threat to human health, according to a recent study.

Research carried out in northwest England, examined faeces samples collected from horses in an equine hospital and in two livery yards. From a total of 264 samples, 296 isolates of antibiotic-resistant Escherichia coli were identified.

Although some strains of E. coli can cause disease, the organism is generally non-pathogenic, and is found as a normal occupant of the gut. However the microorganism can play an important role in transferring antimicrobial resistance to more dangerous bacteria.

Mohamed Ahmed, of the Department of Veterinary Microbiology and Parasitology, at AL Fatah, University, Tripoli, Libya, working with colleagues at the Liverpool Vet School, examined faecal samples collected from the University’s equine hospital and from livery yards.

They found antibiotic resistant E. coli in faeces from both locations.

Hospitalised horses were more likely to have antibiotic resistant E. coli in their faeces and were more likely to carry organisms that were resistant to multiple drugs than those maintained on livery yards.

Of the 109 faeces samples collected in the hospital, 89 contained at least one antibiotic resistant E. coli isolate. In contrast only 35 of 155 faeces samples from the livery yards yielded antibiotic resistant E. coli.

Another problem that was more common in hospitalised horses was multiple drug resistance (MDR) - in which resistance to four or more antimicrobial agents occurs. Nearly half (48%) of the resistant isolates from the hospital environment showed multiple drug resistance phenotypes, compared with only 12% from the livery yards.

The scientists identified genes responsible for conferring resistance to four antibacterial agents (trimethoprim, ampicillin, tetracycline and chloramphenicol) using PCR amplification techniques. They found that many of the genes were those commonly found in E. coli in other species of domestic animals and humans.

When susceptible bacteria are exposed to antibacterial agents, many will be killed. however, some may survive and multiply, producing a generation of resistant organisms (selective pressure).

But resistance to antibacterial agents does not only increase as a result of selection. Some bacteria can transfer antimicrobial resistance to others by direct contact - passing pieces of genetic code, (plasmids and integrons), from one microorganism to another in a well-reported mechanism known as conjugation.

The researchers conclude that, in the UK, horses may provide both recipients, and sources, of antibiotic resistance, MDR, and be an extensive reservoir of antimicrobial resistance genes that could pose a potential threat to human health.

Written by Mohamed Ahmed / Mark Andrews

The full open access report is available:

Antimicrobial resistance in equine faecal Escherichia coli isolates from north-west England.
MO Ahmed, PD Clegg, NJ Williams, KE Baptiste, M Bennett.

http://www.ann-clinmicrob.com/content/9/1/12

Back issues of Equine Science Update from 2005 -2008 are now available. As PDF files they can be downloaded direct to your computer and are fully searchable.

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www.equinescienceupdate.co.uk/backissues.htm
The Australian Veterinary Association is warning horse owners to be prepared as the time of year approaches when Hendra virus infection has appeared in recent years.

Hendra virus was first isolated in September 1994 from an outbreak at a training complex in Hendra (a suburb of Brisbane, Queensland, Australia) after which the virus was named. During that initial outbreak 14 horses died. Seven other horses were shown to have been infected and were humanely destroyed. Affected animals typically showed severe lung damage. Two humans were affected, one of whom died.

Fruit bats (Pteropus spp) commonly known as flying foxes have been identified as the natural host for the Hendra virus (HeV). Antibodies have been found in all four species of fruit bats found in mainland Australia.

“Anyone working with horses should be on the lookout and immediately report any suspected cases of Hendra virus infection over the coming months,” said Dr Barry Smyth, Vice-President of the Australian Veterinary Association.

“Recent mass movements of large flying fox colonies means owners should be especially vigilant.

“Wet weather in some parts of the country has caused flying foxes to take to the air to find food in new areas. An influx of more than 130,000 into Victoria was confirmed by scientists just last week.

“So far cases of Hendra infection have been restricted to Queensland and New South Wales, however there is a potential for the disease wherever there are flying foxes.

Common signs to look out for include respiratory distress, frothy nasal discharge, elevated body temperature (above 40°C) and elevated heart rate. Some horses may show neurological signs including incoordination and head pressing. However, it is important to realise there are no specific signs of infection.

What can you do to limit the risk of horses being exposed to the virus? “Protective measures include placing feed and water under cover where possible, not placing feed and water under trees when flying foxes are in the area, not using feed that might attract flying foxes (such as fruit and vegetables), and where possible removing horses from fields where flying foxes are active, and fencing off trees where flying foxes roost” Dr Smyth said.

The few cases of human Hendra virus infection have been the result of very close contact with horses infected with the virus. Body fluids or secretions from infected animals are likely to contain the virus.

At the time the people became infected the horses did not appear sick.

“The risk can be greatly reduced by adopting good hygiene practices as a matter of routine and taking increased precautions around any sick horse,” said Dr Smyth.

“It is also important to wash your hands with soap and water regularly before, during and after handling horses and minimise contact with your horse if it is unwell,” he said.

Since 1994, Hendra virus has been confirmed in 40 horses and seven humans. In these cases all horses either died or were destroyed and four of the people died.

Currently there is no specific treatment for Hendra virus infection in horses.

The Australian Veterinary Association recommend you contact your veterinarian immediately if you notice health problems in your horses or suspect they may be infected with Hendra virus.
An independent group of international experts has been set up to advise on preventing infectious diseases in horses.

The Prevention of Equine Infectious Disease Guidelines Group (PrEquiD) is an independent international panel of veterinary experts, specialised in immunology, vaccinology and/or equine medicine. The PrEquiD was set up to compile guidelines for the prevention and management of major equine infectious diseases based on current scientific knowledge and available vaccines.

Its members include highly respected equine infectious disease experts from eight countries and spanning four continents: Peter Timoney (University of Kentucky, USA), Paul Lunn (Colorado State University, USA), Ann Cullinane (Irish Equine Centre, Ireland), James Gilkerson (University of Melbourne, Australia), Alan Guthrie (University of Pretoria, South Africa), Klaus Osterrieder (University of Berlin, Germany), Richard Newton (Animal Health Trust, UK), Paul-Pierre Pastoret (World Organisation for Animal Health), under the chairmanship of Marian C. Horzinek.

After an initial meeting in November 2009, the group met again in March 2010, to discuss guidelines for Equine Influenza and Equine Herpes virus infections. These diseases are widely considered to have a significant impact on the horse industry, based on disease outcome, economic impact, veterinary care and travel restrictions.

Practical, evidence-based recommendations are currently being finalised and will be made available shortly.

“Our aim is to develop overarching international guidelines for the management of infectious diseases,” said Professor Horzinek. “These should contain practical, evidence-based recommendations for disease control and horse movement.”

Professor Peter Timoney added, “the equine industry worldwide is facing an unprecedented threat from the challenge of infectious diseases. It’s a huge industry involving a complex range of stakeholders, including veterinarians, owners, breeders, trainers, shippers and regulators.”

“We must set aside individual and national agendas and concentrate on the bigger picture if we’re to achieve greater international control over the spread of equine diseases and protect our industry for the future.”

The establishment of PrEquiD was initiated and sponsored by Fort Dodge Animal Health (a division of Wyeth). With the acquisition of Wyeth by Pfizer in 2009, this initiative is now supported by Pfizer Animal Health.

“Our company is proud to be associated with this initiative, which will help to update and advise veterinary practitioners responsible for the health and welfare of horses worldwide,” commented Helen Barnes, Equine Business Manager of Fort Dodge Animal Health (now Pfizer Animal Health), sponsor of the PrEquiD guidelines group.

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Another cloning milestone has been reached by researchers at Texas A&M University with the successful birth of a foal produced using oocytes from a live mare.

Mouse, was born May 5, 2010. The efforts of his owner, Kit Knotts, to find a horse that had the same qualities as her prized Lippizaner stallion Marc, (Pluto III Marcells) led her to Texas A&M University and equine reproduction expert Dr Katrin Hinrichs. “We have actually worked on this clone for about two years,” said Hinrichs, a professor in the Department of Veterinary Physiology and Pharmacology. “This is actually our first foal produced using oocytes, or egg cells, from live mares. We recovered the oocytes from our herd of research mares using the same method used to recover eggs from women for in vitro fertilisation.”

“We used the oocytes for the cloning process, which made it difficult as we had very few to work with at any one time. During the cloning process, we tested a new technique that has been reported in mice to decrease birthing problems.”

Dr Hinrichs lab is noted for achieving the first cloned foal in North America, and the third in the world with Paris Texas, who arrived in 2005. The lab has since produced twelve cloned foals.

The process began with a biopsy of skin cells from Marc, the horse to be cloned. Through the cloning process using oocytes recovered from a live mare, viable embryos were developed and sent to Hartman Equine Reproduction Center, an embryo transfer facility in North Texas which works closely with Hinrichs’ lab, for transfer into the surrogate mares. Minnie, the mare carrying Mouse, stayed in North Texas for about 200 days, then was sent to her new home in Florida.

Minnie began to show signs of an early delivery, and was taken to the University of Florida College of Veterinary Medicine for observation and intervention. That’s where Mouse arrived and was cared for by a team of neonatal experts that helped make sure he would make it through this critical time.

What problems might be expected with cloned foals?

In an article in the Journal of the American Veterinary Medical Association, Dr Aime K Johnson and others from Dr Hinrichs’ lab examined their records relating to cloned foals born between 2004 and 2008.

Fourteen cloned foals were born alive. Six of these were clinically normal for all variables that were checked. These included gestation length, birth weight, foaling complications, gross abnormalities of the fetal membranes, appearance of the umbilicus, mental state of the foal, limb deformities.

Eight foals did have problems. Most common were maladjustment, enlarged umbilical remnant and angular deformity of the forelimbs. Some foals required aggressive treatment and intensive care. Two foals died, but all the others responded to treatment. All twelve foals that survived have remained healthy.

Because of the risk of complications and problems in the period just after birth, Dr Hinrichs’ team recommends that foals derived by cloning should be treated as high-risk neonates, and their birth should be closely supervised. Facilities for intensive care should be available in case they are needed.

They suggest that supplementary oxygen should be on hand. Plasma transfusion may be required, as failure of passive transfer of immunity is frequently a problem -even when the mare’s colostrum quality was adequate. The umbilicus must be monitored closely and treated aggressively should signs of infection appear.

Once past the critical first few days of life, foals derived by cloning appear to be healthy and can be expected to grow normally.

For more details see:

Physical and clinicopathologic findings in foals derived by use of somatic cell nuclear transfer: 14 cases (2004–2008)

AK Johnson, SC Clark-Price, Y-H Choi, DL Hartman, K Hinrichs.
JAVMA (2010) 236, 983-990

http://tamunews.tamu.edu/2010/06/11/veterinary-researchers-achieve-cloning-first/
Researchers have identified the genetic mutation responsible for Lavender Foal Syndrome. Lavender Foal Syndrome (LFS), also known as Coat Color Dilution Lethal (CCDL), is a fatal disease of newborn Arabian foals, particularly in those of Egyptian Arabian breeding.

Clinical signs include seizures, nystagmus (involuntary movement of the eyeballs), limb rigidity, paddling movements, and opisthotonos (hyperextension of the head, neck, and spine). The mare often has difficulty giving birth.

The condition derives its name from the abnormal coat colour with which most affected foals are born, variably described as silver sheen, lavender, pale chestnut or pale, dull pinkish grey.

A team of scientists from Cornell University and the Maxwell H Gluck Equine Research Center have found that Lavender Foal Syndrome is the result of a mutation in a gene called myosin Va (MYO5A).

Lead researcher was Samantha A. Brooks, PhD, assistant professor in the Department of Animal Science at Cornell University’s College of Agriculture and Life Sciences.

“The recent completion of the horse genome sequence has provided new tools for mapping traits with unprecedented resolution and power” she explains. “We have applied one such tool, the Equine SNP50 genotyping chip, to a small sample set from horses affected with Lavender Foal Syndrome. A single genetic location associated with the disorder was rapidly identified using this approach.”

All of the affected foals had a single mutation in a specific region (exon 30) in the MYO5A gene.

The myosin Va transport complex is responsible for the transfer of pigment to the keratinocytes and for transport of transmitter substances in the nerve cells. A mutation affecting the gene could easily result in interference with normal function of melanocytes (responsible for hair colour) and nerve cells.

The research team went on to design a PCR–based Restriction Fragment Length Polymorphism (PCR–RFLP) assay, which they used to investigate the frequency of the mutant gene. They found that all affected foals tested were homozygous for this mutation (i.e. both copies of the gene were defective).

Of the 14 parents of seven affected foals, eight were available for testing and were found to carry the defective gene.

Carriers, containing one normal and one defective allele, were detected in high frequency in families that had produced an affected foal. Of 23 horses that were related to affected foals, 16 were carriers.

Horses that were not related to affected foals were less likely to be carriers.

“Our results suggest that the population frequency of carriers of this deletion is 10.3% in the Egyptian Arabian” Brooks reports.

She adds that this may be an over estimation “as owners who suspect they have LFS carrying horses may have been more motivated to participate in the study.” On the other hand it could be an underestimate, as some owners might not admit to having had a lavender foal.

“Given our estimate of the number of carriers in the population we expect that around nine LFS foals would be born in the USA each year”

The Arabian has been used to develop other modern light breeds of horses and so it is possible that the LFS allele is also present in those breeds.

“From a practical standpoint, this discovery and the development of a diagnostic test for the LFS allele provides a valuable new tool for breeders seeking to avoid the disease in their foal crop.”

For more details see:
Are horses with Cushing’s disease (pituitary pars intermedia dysfunction; PPID) more susceptible to worms? If so, they may need special consideration when developing strategies for controlling internal parasites.

A study at Oklahoma State University looked at the effect of PPID and age on fecal worm egg counts and the time for eggs to reappear in the feces after deworming.

Dr Dianne McFarlane and colleagues compared the response to anthelmintic treatment on faecal egg counts in healthy horses and those with Cushing’s disease.

Twenty-nine healthy horses (ranging in age from 4 to 35 years) and 13 horses with PPID (13-33 years old) were used in the study. The presence or absence of PPID was confirmed by clinical signs and plasma alpha MSH assay (reference range for normal horses <35pmol/L; PPID horses 45pmol/L).

The researchers performed faecal egg counts at 2-week intervals before and after treatment with ivermectin.

At 2 and 4 weeks after treatment with ivermectin all horses in the study had negative faecal egg counts.

Horses with PPID had higher egg counts than did healthy horses, both before and at 6-12 weeks after treatment. This difference could not be explained by the PPID horses being older than the control horses, as the researchers found no correlation between age and faecal egg count.

A fecal egg count greater than 200 epg is often taken as an indication that anthelmintic treatment is required. In this study 6 of the 13 horses with PPID reached the 200epg threshold by ten-weeks after ivermectin treatment. In contrast only 2 of 25 control horses had reached the threshold at the same time - a difference that was statistically significant.

“Given similar environmental conditions, horses with PPID were more likely to have higher faecal egg counts than were healthy horses” Dr McFarlane reports.

The findings suggest that horses with PPID may pose a risk for pasture hygiene if not managed properly.

On the other hand, age alone does not appear to increase the horse’s susceptibility to parasitism. However, the researchers point out that only a small number of horses were involved in that analysis. More work is required to confirm that older horses do not need treating differently to younger horses when it comes to deworming.

For more details see:

Two new non-invasive methods of monitoring respiratory disease in horses have been developed as part of a research project at the University of Glasgow.

Cough frequency provides a good indication of respiratory inflammation - the more inflammation, the more the horse coughs. But it is often not practical, or cost-effective, for someone to physically count the number of times a horse coughs over an extended period.

The research team, led by Professor Sandy Love, has developed a technique that allows vets to easily monitor the frequency of coughing in a horse over a long period of time with 100% sensitivity and 100% specificity. The method uses a digital audio recorder attached to the head collar to monitor cough frequency.

In a study to test the value of the technique, they compared audio recordings, each lasting one hour, with simultaneous video recordings. A total of nine recordings were collected from seven stabled horses.

The graph of the audio file could then be examined to identify coughs. Not only was this a rapid process - a recording lasting one hour could be analysed within three minutes - the technique was also found to be very accurate.

When they compared the audio and video recordings the researchers found that every cough was correctly identified, and no extraneous noises, such as foot stamping, were mistaken for coughs.

The researchers point out that the speed of the analysis could be increased further by using computer software to automate the analysis.

The research also led to the development of a simple device that could be attached to the horse’s head collar to collect expired moisture. It was used in a study to see whether any of the constituents of exhaled breath could be used as indicators of respiratory inflammation.

The researchers found that the most useful indicator was the pH of the liquid condensed from the expired breath. There was trend toward a reduced pH (acidification) in horses with lower airway inflammation.

The concentration of gases such as carbon monoxide, nitric oxide and ethane was also measured, but the researchers found no correlation between these substances and inflammation in the respiratory tract.

The components of the device are readily available in DIY stores.

Both techniques were well tolerated by horses and ponies and could be used safely and ethically on repeated occasions.

At present, repeated endoscopic examinations may be used to monitor the progress of respiratory disease. These techniques would promote a simpler way of monitoring respiratory health.

They could be easily produced commercially and would give a quick and ethical way of monitoring respiratory inflammation in horses. They would allow objective assessment of whether or not the horse was responding to a particular course of treatment.

The work was made possible by funding from The Horse Trust. Paul Jepson, Chief Executive and Veterinary Director of The Horse Trust said, “We are delighted that the research we have funded has led to new, non-invasive ways of monitoring respiratory inflammation in horses. These techniques could have a major impact on horse welfare by improving the diagnosis and treatment of this common condition.”

For more details see:

Exhaled breath condensate hydrogen peroxide and pH for the assessment of lower airway inflammation in the horse.
Duz M, Whittaker AG, Love S, Parkin TD, Hughes KJ.

Validation of a digital audio recording method for the objective assessment of cough in the horse.
Duz M, Whittaker AG, Love S, Parkin TD, Hughes KJ.
http://dx.doi.org/10.1016/j.rvsc.2010.03.005
What can be done to enhance the safety and soundness of Thoroughbred racehorses? Some answers should emerge from the forthcoming third Health and Welfare Summit to be held by the Grayson-Jockey Club Foundation at the Keeneland Sales Pavilion in Lexington, Ky., June 28-29, 2010.

The summit builds on the work started in 2006 and 2008.

“Many of the welfare and safety initiatives that have been recommended and adopted in recent years trace their roots to our first two summits,” said Ed Bowen, president of the Grayson-Jockey Club Research Foundation. “I expect the interaction and dialogue among participants at the upcoming summit to yield additional ideas and recommendations that will be beneficial to our sport.”

The two day conference aims to identify ways of enhancing the safety and soundness of Thoroughbred racehorses. Approximately 60 individuals have been invited to participate. They include jockeys, trainers, owners, breeders, veterinarians, scientists, track superintendents, racing officials, educators, farriers, industry leaders and racetrack management personnel.

All of the first day's sessions are will be open to the public. Live video streaming of the open sessions will be available for the first time.

“We are particularly grateful to Keeneland for hosting the summit once again and for video streaming the open sessions on its website so that anyone with an interest in equine safety can follow all of Monday’s and part of Tuesday’s proceedings” Bowen added.

At the conclusion of the morning session, veterinarian and epidemiologist, Dr. Tim Parkin, of the University of Glasgow, who is analyzing data submitted to the Equine Injury Database, will provide an update and preliminary findings on reported fatality data.

He will be joined for the presentation by Dr. Mary Scollay, equine medical director for the Kentucky Horse Racing Commission who helped launch the Equine Injury Database.

Other topics to be covered in the morning session include a panel discussion on race track surfaces, and updates on the Racing Medication and Testing Consortium, the NTRA Safety and Integrity Alliance, and the Thoroughbred Safety Committee.

The afternoon session, will feature panel discussions on racing equipment and safety, racetrack environment and training practices, and transitioning thoroughbred racehorses to second careers.

On the second day, participants will break into work groups to determine objectives and develop action plans. The work group sessions will be closed to the public and will not be video streamed.

After establishing goals and objectives for 2010, the summit will conclude with a panel discussion concerning implementation of safety and soundness recommendations.

For more information see:
http://www.grayson-jockeyclub.org/summitDisplay.asp