U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

Visit our Website at: www.extension.umn.edu/horse
for more information and to subscribe to the newsletter.

Volume 9, Issue 12

December 2013

UNIVERSITY OF MINNESOTA EXTENSION

Ask the Expert: Black Walnut Toxicity

Q: I've heard that black walnut trees are toxic to horses. I have black walnut tress in my pasture, should I cut the trees down?

A: Although the heartwood (inner most wood) of black walnut trees is toxic to horses, the trees itself is not toxic with the exception of the possibility of kidney damage if a horse ingests the outer green hull of the nut. Most toxicity with black walnut trees occurs when horses are bedded with black walnut wood shavings. The heartwood of the tree is valuable and is commonly used in manufacturing furniture and cabinets. The shavings from this process are sometimes given or sold to horse farm owners to use as bedding. Black walnut shavings are much darker than commonly used pine shavings. Depression, limb edema or stocking up, warm hooves, laminitis, stiff gait, and reluctance to move can be seen within a few hours of exposure to black walnut shavings. Clinical signs often subside within hours of removing bedding.

Because a horses is unlikely to come into contact with black walnut heartwood in a pasture, it is not necessary to remove the trees from pastures. *By: Krishona Martinson, PhD, Univ. of Minn.*

Research Update: Furosemide Use in Thoroughbreds

One of the most controversial issues in horse racing is the debate over the use of the loop diuretic furosemide (also known as Salix or Lasix) in the prevention of exercise-induced pulmonary hemorrhage (EIPH), a condition characterized by bleeding into the lungs during intense exercise. It has long been believed that furosemide administration improves horses' racing performance when compared to non-medicated horses. Researchers at Kentucky Equine Research conducted a study to measure the effects of furosemide on horses' energy efficiency during a standardized exercise test (SET).

Six Thoroughbred geldings with an average age of 6.8 years were selected for the study. For 21 days leading up to the SET, all horses received 13 pounds of hay, 9 pounds of grain, and 0.5 pounds of a vitamin/mineral supplement. Horses were not given access to water or feed for the 4 hours leading up to the SET. All horses were weighed 4 hours before the SET, immediately before and after the SET, as well as at 4, 8, 12, 24, 48, and 72 hours after the SET. Heart rate, VO_2, and VCO_2 were measured at intervals throughout the SET. Blood samples were also taken before, after, and during the SET to measure lactate, glucose, total protein (TP) concentrations, and packed cell volume (PCV). One hour following the SET, all horses were assessed and graded for EIPH by tracheobronchial endoscopy.

In this study, horses treated with furosemide prior to the SET experienced significantly greater weight loss (27 pounds, compared to 12 pounds in untreated horses). Untreated horses had higher heart rates during the SET and greater lactate accumulation. Weight-adjusted VO_2 and VCO_2 measurements did not differ significantly between treated and untreated horses. EIPH incidence after the SET was low and not associated with treatment.

By decreasing body weight, rather than by reducing hemorrhage, furosemide administration reduces the amount of energy generation needed from both aerobic and anaerobic pathways during exercise. Weight loss was attributed to furosemide's diuretic effect.

Summarized by Sam Beeson, Univ. of Minn. Veterinary Student

Inside This Issue

Upcoming Events

Unwanted Horse Summit
Saturday, March 8, 2014
Leatherdale Equine Center
St. Paul Campus
Registration and agenda will be available in January

U of M Releases 2 Apps for iPhones and iPads
"Hay Price Calculator" converts price per bale to price per ton. "Healthy Horse" estimates a horses body weight, ideal body weight, and a body weight score based using new research-based equations. Both apps are available in iTunes for a small fee.

"Like" us on Facebook
Research Update Mondays, Tip of the Week Wednesday, Friday Funnies and upcoming events.
www.facebook.com/UMNHorse

Looking for a "speaker" for your next equine function?
Use our free, recorded webinar library!
www.extension.umn.edu/horse/webinars

Prevention of Exuberant Granulation Tissue or Proud Flesh

Exuberant granulation tissue (EGT), commonly known as proud flesh, is a frustrating complication of wound healing in horses. It can lead to extensive scarring and in serious cases, be detrimental to a horse's career. Granulation tissue is red, moist, soft, and bumpy. It bleeds easily when rubbed or scraped. It is considered exuberant when it becomes unorganized and extends beyond the margins of a wound. EGT most often develops in horses on wounds of the lower limb that are healing by second intention or those wounds that can't or shouldn't be sutured closed. EGT may develop due to chronic inflammation or lack of oxygen to the wound. Preventing EGT is easier than treating it.

The horse tends to have a weak acute inflammatory response in comparison to other mammals. This can delay wound healing and promote the formation of EGT. Boney fragments, foreign bodies, and normal motion can also cause chronic inflammation in a wound. Many agents marketed to control granulation tissue actually cause more inflammation and/or damage the new skin cells. Surgical intervention, thorough cleaning, appropriate stabilization, and avoiding most topical agents will help decrease wound inflammation and the likelihood of EGT formation.

Bandaging can promote the formation of EGT by creating a low oxygen, high moisture environment. Bandages can also lead to chronic inflammation through direct wound irritation. Low oxygen levels in a wound have been shown to promote the proliferation of fibroblasts, a principal cell type of granulation tissue. Bandages have been found to lead to slower wound closure and a greater likelihood of excessive granulation tissue. If possible, application of bandages should be avoided on wounds healing by second intention. If a bandage is needed (i.e. to prevent further trauma or wound contamination), it should be applied to the wound only until a good granulation tissue bed has formed. Wounds should then be managed without a bandage. If bandaging is needed long term, various topical treatments can be applied to decrease the amount of exuberant granulation tissue. Examples of these topical treatments include corticosteroids and silicone.

If EGT has begun to form, it needs to be trimmed back until it does not rise over the wound edges. There are no nerves in this tissue so the horse does not usually object as long as healthy skin is not "trimmed". However, granulation tissue is very vascular so bleeding is often significant and a temporary bandage may be needed for the first few hours. Trimming EGT does not seem to slow total healing time as long as the wound is otherwise healthy.

Topical corticosteroids can be applied to the wound to reduce the chronic inflammatory response and prevent the formation of EGT. One to two applications may be all that is needed. Prolonged use of corticosteroids should be avoided as the drug can interfere with the overall healing process. Silicone-containing wound dressings can significantly decrease the likelihood of the formation of EGT and improve tissue quality. Silicone blocks certain inflammatory mediators and decreases tissue overgrowth. Silicone bandages can be used long term with fewer side effects than corticosteroids.

A 2010 study used unfocused extracorporeal shockwave therapy (ESWT) to treat limb wounds. ESWT did not accelerate the healing of wounds, but the wounds treated with ESWT did have less EGT. The results of this study suggested that ESWT can aid in the prevention of the formation of exuberant granulation tissue, but further research in this area is needed.

There are many different options for the prevention and treatment of EGT. Prevention currently centers on bandage management. More research needs to be done in order to understand the full potential of newer preventative modalities such as ESWT. Treatment should be limited to those methods and agents shown safe for new skin cells or you may be controlling the EGT but also slowing wound healing.

By: Claire Kamrath, DVM, past University of Minnesota Veterinary Student