

HEALTHZONE

AAEP Convention Coverage

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THIS PAST DECEMBER more than 5,400 veterinarians, students, and industry members from 48 countries convened in Orlando, Fla., for five days of continuing education at the 2016 American Association of Equine Practitioners annual convention. While there, they learned about hundreds of horse health topics and recent research findings to share with their practices and clients back home. Here are summaries of six noteworthy presentations from that event.

TIPS FOR REHABBING SOFT TISSUE INJURIES

Prevention is the best treatment for any health issue, said Dr. Andris J. Kaneps, “but we all know that we can put a horse in a padded room, wrapped in bubble wrap, and we’ll still have issues we’ll need to address.”

Some of the most common are injuries to soft tissues such as tendons and ligaments. Kaneps, who owns Kaneps Equine Sports Medicine and Surgery, in Beverly, Mass., reviewed best practices for rehabilitating soft tissue injuries.

In a healthy tendon or ligament, “there are even, organized fiber patterns,” he said. “When the injury occurs, the fibers tear, hemorrhage, and go through an inflammatory process. The goal with treatment is to take the problem area and return it to a normal structure.”

The first step is recognizing there’s a problem, he said, often evident as pain, swelling, and sensitivity to palpation.

The next step is the most important: Stop the horse from exercising.

Then the goal should be to reduce inflammation around the injury, which will make it easier to diagnose. He suggested using cold therapy and/or nonsteroidal anti-inflammatory drugs (NSAIDs). Additionally, apply a support bandage to keep the area stable.

Kaneps suggested veterinarians aim to reach a diagnosis within a day or two of injury. With soft-tissue, ultrasound is often the most useful imaging modality.

After diagnosis it’s time to begin rehabilitation. Options include:

Cold therapy—One of the simplest measures is also one of the most effective at helping tissues heal. Kaneps said the optimal tissue temperature to reach during cold therapy is 59–66°F (15–19°C).

The gold standard for cold therapy is immersion in an ice and water slurry, he said. It takes 10 to 13 minutes to reach the thermal plateau (the coldest the limb will become), and the total soaking time should be 20 to 30 minutes. Study results have shown that ice water immersion can cool deep tissues in a horse’s limb by up to 16°C (61°F).

He recommended repeating cold therapy three to four times per day for the first 48 hours after acute injury and continuing treatment two to three times per day for about two weeks. When the horse returns to work, owners can administer cold therapy following exercise to reduce inflammation at the injury site.

Kaneps said ice and cold packs can be useful, but they tend not to be as effective as ice water immersion. Cold salt water spas can also help.

Controlled exercise—“This is the primary, most effective treatment,” Kaneps said, adding that studies have shown that 67–71% of horses with soft-tissue injuries treated using controlled exercise had successful outcomes, compared to just 25–51% of horses treated with pasture turnout.

Kaneps recommended caretakers begin hand-walking horses shortly after the injury because tendons and ligaments require stress to heal properly. The rule of thumb is to increase exercise by 5–10% each week and reassess lameness and ultrasound scans every 60 to 90 days.

He said many controlled exercise programs go something like this:

- Gradually build up to hand-walking for 30 minutes two to three times per day;



Dr. Andris Kaneps applying therapeutic ultrasound

COURTESY DR. ANDRIS KANEPS

- Transition to walking under tack for 20-25 minutes per day;

- After about two weeks, add three to five minutes of trot per day, but not until the horse is warmed up at the walk for 10-15 minutes;

- Increase the trotting time gradually to 20-25 minutes per day;

- Add three minutes of canter, gradually increasing that time.

The veterinarian should recheck the horse's soundness before each workload increase, he added.

Regenerative treatments—Some of these therapies can improve or shorten the healing process. Options include:

- Platelet-rich plasma (PRP), which delivers a high concentration of platelets in the form of blood plasma to a lesion, increasing the amount of growth factors at the site to help the injury heal. There are commercially available PRP products, as well as a stall-side system that separates the horse's own red and white blood cells from the plasma in a relatively short amount of time. The veterinarian injects the PRP into the lesion or the surrounding areas.

- Stem cells, which Kaneps said recruit growth factors to help injured areas heal with better quality, strength, and elasticity. There are two main types of stem cells: bone marrow- and adipose (fat)-derived. He said researchers on one study showed a lower reinjury rate in horses with soft-tissue injuries treated with stem cells than without.

Kaneps said the optimal time to inject both PRP and stem cells is three to four weeks following injury, preferably using ultrasound guidance. After the injection, stop exercise and keep the limb bandaged for about two weeks and perform a veterinary follow-up four weeks after injection.



Ultrasound guided injection of platelet-rich plasma (PRP)

Therapeutic ultrasound—This stimulates healing by delivering heat to the injured tissue, he said, which increases local circulation, among other effects. He added that it can also improve collagen disposition and wound contraction.

Extracorporeal shock wave therapy—This approach has been shown to reduce inflammation; increase cytokines,

growth factors, and osteoblasts (all important to healing); and potentially recruit stem cells to affected areas, he said, cautioning that tissue damage can occur with a too-high setting.

Laser therapy—While there have been many recent advancements in this area, Kaneps said there's still no research proving it's effective for treating soft-tissue injuries. Still, he said modern lasers could offer sufficient energy and penetration depth to reach and provide energy to the cells involved.

LOW-INTENSITY EXERCISE KEY TO MUSCLE INJURY HEALING

"Muscle pain and injury as a cause of lameness and poor performance in the horse are poorly recognized," said Dr. Tracy Turner, who owns Turner Equine Sports Medicine and Surgery, in Big Lake, Minn.

He said factors known to predispose horses to muscle strains and injury include cold temperatures, impaired circulation to the muscle, muscle fatigue, poor or insufficient training; and insufficient warmup. Diagnosing these injuries, however, is very challenging.

Veterinarians can't diagnose muscle injuries using radiographs or nerve blocks, he said, and ultrasound is only useful after locating the injured muscle. Palpation isn't always helpful because some muscle injuries are only painful during exercise or movement. And elevated muscle-related enzymes in the blood aren't useful indicators, either.

So to make a muscle injury diagnosis, start with collecting a thorough case history.

"It is important to determine whether there was a history of a fall or other trauma, the duration of clinical signs, the presence of swelling, and whether lameness or poor performance has been documented," he said.

Turner suggested practitioners stand the horse squarely and look and palpate for signs of muscle atrophy (wasting), fibrosis (scarring), tension, spasm, defects, or pain. Then consider using thermography, which reveals muscle injuries as temperature increases or decreases.

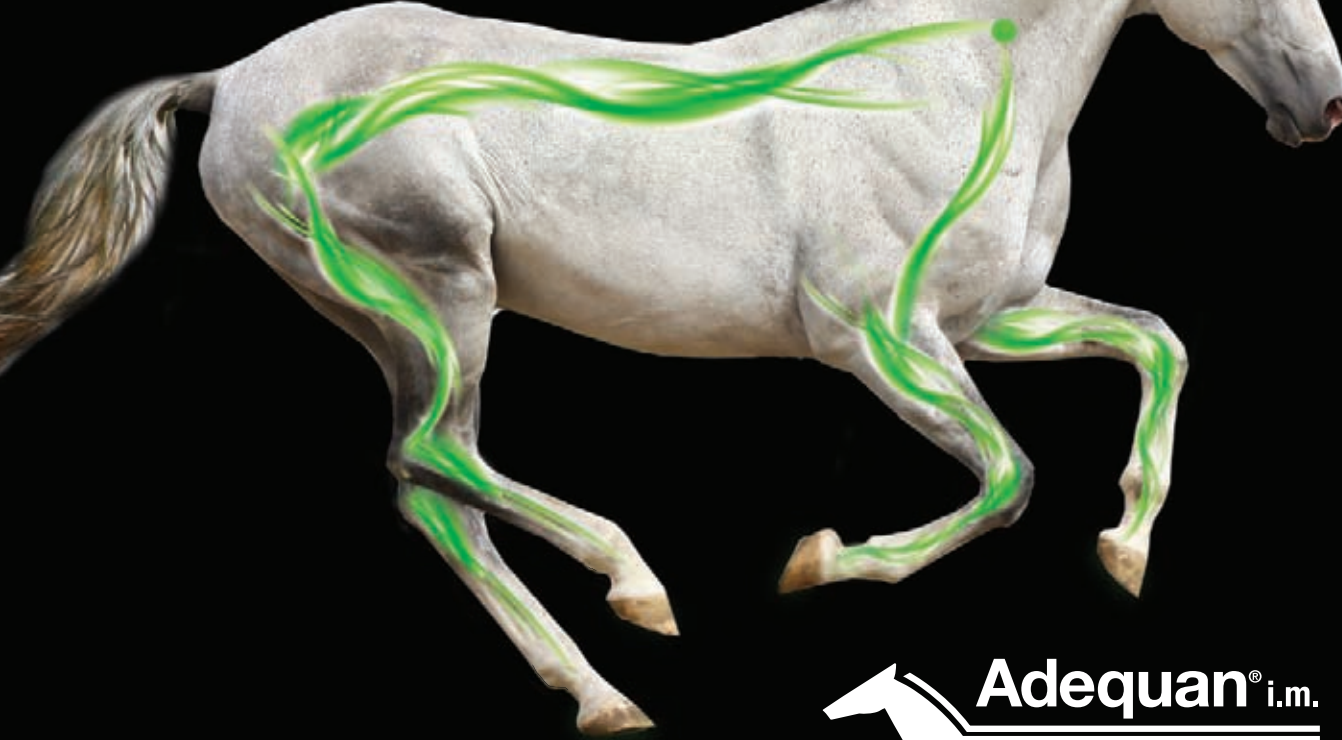
Once the veterinarian has located the injury, he or she can use ultrasound to evaluate muscle fiber alignment and look for hemorrhage.

The next step is rehabilitating the horse. Turner says the general goals are improving flexibility and muscle condition, strengthening, and returning to full activity. Rehab options he described include stretching, massage, therapeutic ultrasound, shock wave therapy, electrical stimulation, and pulsed electromagnetic field therapy.

"Regardless of the modality ... I believe that the horse must remain in at least low-intensity exercise," Turner added.

Another important component to rehab is strengthening the muscles, he said. "Horses gain strength by flexion, through transition of gait, stress, and lateral work," he said.

He encouraged veterinarians to continue stretching exercises during and after strengthening.



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Once training commences, said Turner, “I’ve found that altering the exercise program can be most beneficial, and conditioning is of utmost importance” in the horse’s long-term recovery.

MANAGING ORTHOPEDIC EMERGENCIES

“We’re always going to have broken horses,” said Dr. Dean Richardson, at the start of his presentation about orthopedic first aid. Fortunately, not all broken horses are beyond hope.

Richardson is the chief of large animal surgery at the University of Pennsylvania School of Veterinary Medicine’s New Bolton Center, in Kennett Square. He described how veterinarians can best handle orthopedic emergencies such as extremely unstable limb fractures.

“With proper sedation and simple emergency bandaging, a large proportion of catastrophes can be humanely managed until a thoughtful decision can be made,” as to whether the injury can be repaired surgically or whether the horse requires euthanasia, he said.

“Many people are under the impression that you can’t do anything about injuries involving bones,” said Richardson. “The reality is that many severe lacerations and orthopedic injuries seem to be far worse than they are.”

While some extremely catastrophic injuries do require euthanasia, you don’t want to find out after you’ve put a horse down that other horses with the same injury have been treated successfully.

So, what orthopedic injuries are typically treatable and which are hopeless?

Skin wound over a fracture—These are not death sentences, said Richardson. Prognosis does, however, depend on the degree of fracture contamination. Superficial lacerations are much less likely to result in unmanageable infection, especially in locations with a healthy muscle covering and blood supply.

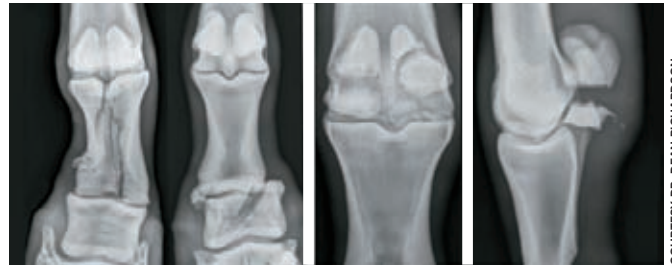
Nondisplaced fractures—Any of these injuries have a chance to heal, said Richardson. And not every horse with a non-weight-bearing lameness will develop support-limb laminitis.

Simple vs. comminuted fractures—“Simple fractures are nearly always more manageable than comminuted fractures (multiple fragments), but location is everything,” he said. The higher up the limb, the less probable that it can heal on its own, with the exception of the humerus (located between the shoulder and the elbow), which he said has been managed successfully with stall rest.

Articular fractures—Any displaced fracture involving a joint is best managed with surgery, and many joints return to full function if they can be reconstructed properly. Veterinarians can sometimes salvage severe injuries that cannot be reconstructed surgically by fusing the affected joint, said Richardson.

Fractures with vascular compromise—Any major injury with a loss of blood supply is likely to be fatal.

When faced with an orthopedic injury, goals are to keep the owner’s options open, keep the skin intact, prevent further trauma,



A sampling of X-rays depicting broken bones from Dr. Dean Richardson

COURTESY DR. DEAN RICHARDSON

and allay both horse and owner anxiety. The horse needs a proper sedation dose (not so much that he loses all coordination) and analgesics for pain and, if there’s an open wound, antibiotics.

Before hauling the horse to the clinic, the owner can make some important and potentially life-saving transportation decisions. The smoothest-riding trailer is a gooseneck with a ramp. Ship the horse in a space or stall that’s as tight as possible to give him something to lean on to protect his injured limb.

Load the horse so that his injured limb (whether hind or fore) is closest to the rear of the trailer. “So if you brake suddenly, his weight is on the uninjured area,” said Richardson.

Foals fatigue easily, so he said to get them into a recumbent position (lying down) on the trailer, and have an attendant ride with them during the trip.

Many of these horses (particularly those with unstable fractures) should be placed in a splinted bandage for transport. Richardson warned, however, that an ill-applied splint can do more harm than good. Make sure it’s very tight, but not too heavy with bandage material.

“Make the bandage light enough to get the splints closer to the skin, but thick enough to prevent trauma from the splint to the skin or soft tissues,” he said.

Also, be sure the splint is neither too short nor too long to be of use. “A good principle is to stabilize the joint above and the joint below the injury whenever possible,” said Richardson.

He said most mistakes in these emergencies occur because decisions are made too quickly. These are typically high-stress scenarios with owners in a state of panic.

“It is absolutely true that some injuries are so painful and debilitating that our current techniques cannot manage them successfully, but we need to have decision-making evolve alongside improving techniques,” he said. “Many injuries that would have been considered hopeless years ago can now be treated with consistent success.”

STEMMING SPREAD OF INFECTIOUS RESPIRATORY DISEASES

Disease spreads invisibly, often thanks to horses shedding disease but not showing signs. Leading causes of these outbreaks include equine herpesvirus-1 and -4 (EHV-1, -4) and equine influenza virus, as well as equine arteritis virus and strangles.

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Dr. Peter Morresey, of Rood & Riddle Equine Hospital in Lexington, Ky., described how to investigate and control infectious respiratory disease outbreaks. He first reviewed what questions to ask:

- What is the cause of the disease?
- When did infectious and clinically affected cases appear?
- How long will it take for the disease to spread through the exposed population?
- How long will naive populations—never exposed to the disease—remain at risk once sick horses have recovered?
- Will any horses become “reservoirs” for disease, intermittently shedding the disease-causing organism in the future?
- When is it safe to transport, breed, show, or sell recovered and/or exposed horses without risk of disseminating disease?
- Will the disease-causing pathogen persist in the environment (on surfaces)?

“Controlling an infectious respiratory disease involves two main strategies: isolation of affected individuals and identifying then segregating horses exposed to clinical cases,” he said.

However, the success of these tactics depends on factors beyond any veterinarian’s control. For example, there’s the disease transmission that happens prior to the onset of the first clinical case.

“The speed at which an outbreak occurs depends on the interval between (horses’) contact with the first clinical cases and signs of disease in the subsequent contacts,” noted Morresey.

Respiratory disease can spread slowly within a population. An infection might spread considerably before anyone even recognizes the first case. This limits the veterinarian’s ability to stop disease, and it can make isolation protocols ineffective.

A tendency to “shoot the messenger” in such situations makes a veterinarian’s job difficult, he said, especially if it involves suspending horse movement and curtailing day-to-day operations. Nonetheless, appropriate biosecurity protocols must be instituted, including barrier precautions (glove wearing, etc.), containment procedures, and disinfection.

MANAGING POST-MATING INFLAMMATION IN MARES

About 15% of mares develop persistent mating-induced endometritis (PMIE)— post-mating inflammation that doesn’t resolve within 36 to 48 hours. The condition results in lower pregnancy rates and increased early embryonic losses.

Dr. Etta Bradecamp, a reproductive specialist at Rood & Riddle Equine Hospital in Lexington, Kentucky, explained the causes and best treatment for PMIE mares.

Mares are referred to as either “resistant” (normal) or “susceptible.” Susceptible mares have delayed uterine clearance (DUC), with greater than two centimeters of fluid in the uterus when checked on ultrasound 24 hours after breeding.

Bradecamp focused on management techniques that can improve fertility in DUC mares and modulate the inflammatory response. Knowing which of the many treatments are most appropriate and when to use them can be tricky, and it goes back to figuring out the cause.

If you know the mare is likely to have this problem, you can address it early, with a goal of prevention. Only breed her once per cycle. And consider treating with systemic corticosteroids, such as dexamethasone, prior to breeding.

But often the veterinarian discovers the situation 24 hours after breeding. At that point, focus on reducing existing inflammation. Bradecamp said if she had one treatment available to remove inflammatory debris from the uterus, it would be lavage. She suggested lavaging until the effluent (the returned liquid) is clear.

Then it’s time for an ecbolic, such as oxytocin or cloprostenol, to help the uterus clear remaining fluid. In some mares additional therapies might be necessary.

Bradecamp says the veterinarian’s best shot at a good outcome is to stay “ahead of the eight ball.” If the mare has a known problem, treat her prior to breeding. And upon discovering a problem after breeding, lavage and help her clear that inflammation and improve her chances of becoming pregnant that cycle.

EVALUATING NEONATAL FOALS AND POSTPARTUM MARES AT FOAL HEAT

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physiologic changes simply to survive—by beginning to breathe, digest milk, fight disease (as we just learned), and keep up with their dams.

At the same time, the mare must recover from foaling and eat enough to provide nutrition for a growing foal, and her reproductive system must rebound to prepare for another pregnancy.

That's a lot going on in a short time. Morresey advocates that the mare's foal heat—which occurs about seven to 15 days after foaling—might be the best time for a veterinary examination to be sure the foal is hitting his marks and the mare is ready for breeding.

While there are many reasons to breed a mare, a major reason is financial. Selling the foal as a weanling or yearling requires that it be a good size and healthy at sale time. As such, illness or problems that affect growth, health, or soundness have economic impacts.

At birth, a foal is at 10% of his mature body weight, and the most rapid period of growth is in the months following. So foal heat is the ideal time to be sure he's growing normally. Vets assess musculoskeletal development, breathing, heart activity, body structure, way of moving, umbilicus, weight, and, of course, nutrition.

It's likely the foal will have diarrhea (called "foal-heat diarrhea"), but normally he should not be "sick" with it, Morresey said. So if the foal is depressed or diarrhea is ongoing, it's time to investigate further.

Then there's the obvious need to be sure the mare is healthy, because that's the best way she can take care of her foal. She has the tremendous job of feeding the foal (that consumes 20-25% of his body weight each day in milk!), as well as repairing her own system to prepare for the next foal.

She needs a reproductive exam, including ultrasound, to be sure she's ready for breeding.

From a commercial standpoint, Morresey suggested we think of the mare as an airplane: She lands, discharges the foal, and must be ready to take off again so she can fly past the stallion, pick up the next passenger, and be ready to land again in 340 days. That means turning her around in a timely fashion, which is healthy for her as long as all systems are go. He recommended considering breeding on the foal heat as long as there are no post-foaling complications.

Finally, the mare should get a general health exam, including soundness, dental, skin, and endocrine or metabolic function. Appropriate hoof trimming is a must and, of course, she should get enough of and the right kind of feed.

Catching problems early, minimizing mare and foal stress, and keeping the mare in best reproductive health is the best way to protect your investment. **BH**



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