



HEALTH ZONE

Hoof Care

The Stages of Laminitis

BY HEATHER SMITH THOMAS

Many things can cause inflammation of the hoof laminae (laminitis). Serious cases may progress to founder (dropping or rotation of the coffin bone).

Dr. Scott Morrison of Rood & Riddle Equine Hospital in Lexington, says horses have the best chances for recovery if treatment begins early, even before the horse shows signs of acute laminitis—increased digital pulse and pain in the feet.

“Preventative treatment like anti-inflammatories and icing the feet should be given right after the horse has colic surgery, retained placenta, or has eaten too much grain,” said Morrison. “It’s also helpful to ice the feet during the acute phase, when the horse shows foot pain. We’re convinced that cold treatment helps decrease the amount of damage.”

Standing the horse in ice water slurry up to mid-cannon bone—or using a cold salt-water bath—can be very beneficial. Salt water tends to pull some of the edema out of the tissues of the lower limb and possibly the foot.

STAGES OF LAMINITIS

The onset of laminitis, the prodromal phase, begins before the horse shows any foot pain. Second is the acute phase, where he has an increased digital pulse and soreness.

“From the acute phase, the horse either goes on to recovery or becomes chronic,” said Morrison. “If the acute phase progresses to where there’s damage and the bone displaces, the horse enters the chronic phase, and this is when we call it founder.”

Morrison prefers to define these stages to help horse owners understand the disease.

“The horse may go from sub-acute laminitis to recovery, but the other path leads to founder,” he said. “The latter can also be broken down into stages. There are chronic compensated cases and also some chronic uncompensated cases.

“Chronic compensated cases are those that have become stable. The bone has rotated a little and then stabilizes, and the horse continues to grow sole and hoof wall. The bone is no longer actively displacing.

“The chronic uncompensated cases are unstable. The bone continues to rotate, and there are usually chronic abscesses. The hoof isn’t growing new sole and may shut down wall growth in an area—usually the toe if the bone has rotated, with the front part tip-

ping down. If the bone sinks, wall growth may shut down on the medial or lateral side, or the horse may not grow any new foot at all.”

Chronic uncompensated cases show continued displacement of the bone and severe damage to the hoof’s growth center. Coronary band and sole corium fail to grow in certain areas.

“These cases need drastic measures, such as tenotomy or a foot cast, or ways to treat the infections and to get the hoof wall to start growing again,” he said.

FIRST 72 HOURS

“An important thing is to not move the horse at all—just keep the feet cold,” said Morrison. “Don’t even take the horse out of the stall to see how well he’s walking. The acute phase is technically the first 72 hours, and you don’t yet know how much damage there might be. Treat every case aggressively, as though they were all going to tip over the edge.

“Like any musculoskeletal injury, your first approach is to immobilize and rest the injured part, and treat with anti-inflammatories. But since the coffin bone and laminae are inside the hoof capsule, the ways we immobilize these structures must be different. We use foot and sole supports to help take stress off affected areas.

“I prefer to use something on the foot that can be easily put on and taken off,” said Morrison. “You need to do something quick and easy—and temporary. You don’t want to be nailing on the foot, or even gluing, because you’d have to hold the foot up while the glue dries. Hoof boots or things that can be bandaged on work best. Even a Styrofoam sole support or wedge (taped onto the bottom of the foot) can help.

“We worry about the coffin bone rotating because that’s the most common form of displacement, though it can also tip to one side or the other. If it ends up being chronic, the bone will usually rotate. So we do things with foot support to help prevent rotation. We typically add a sole support and a wedge.

“There are still some things we don’t know about laminitis. We don’t know if all the laminae around the entire foot are

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LUITPOLD
ANIMAL HEALTH

compromised and just the areas under the most stress let loose, or whether the laminae are most diseased and compromised in just one area. No one has done studies to determine this. I tend to think that all laminae around the perimeter of the hoof are compromised and that the area under the most strain is what becomes damaged and lets loose first. To tell which area of the foot is under the most strain, you can stand a horse on a pressure mat. Most horses bear most of their weight toward the toe and slightly to the inside—around the apex of the frog—when they are just standing.”

This is why most laminitis cases tend to rotate, with the bone dropping down at the toe.

“Laminae in the toe region are under the most tensile strain when the horse is just standing around, so we try to support that area of the foot. There are many ways to do that, such as decreasing tension of the pull on the bone from the deep digital flexor tendon. The way that tendon pulls on the coffin bone (from the rear) creates a little rotation even in a normal foot, causing the horse to bear more weight on the toe when standing. So if you wedge the heels of the foot up, you take some of the tension off that deep digital flexor tendon, resulting in less pull on the back of the bone.”

But any time you take pressure off one area, this adds pressure somewhere else. “When horses are wedged, we worry about more stress on laminae in the heels and quarters,” said Morrison. “So we carefully monitor these areas of the foot to make sure

we are not overloading or compromising them. We check those areas to make sure there’s not a palpable depression there, which might indicate this part is overloaded. If it is, we decrease the size of the wedge or maybe put the foot back on flat Styrofoam or a flat rubber pad.”

Many kinds of sole support can be used. Materials vary by hardness, which is measured in durometers. Morrison decides what to use based on the individual foot.

“If there’s a strong, resilient sole, I’ll use something more firm to give more support,” he said. “For horses with a weak sole (where a firm support might make the sole sore), I use something softer. Ideally, I try to use something with about the same firmness as a freshly trimmed healthy frog, which is about 40 durometers.

“The firmer the sole support, the more support it gives, but the less forgiving it is for a weak sole. I try to use the firmest material I can get away with on that particular foot.” He also wedges the foot up about 10 degrees.

A horse in a stall stands most of the time, but he will also be moving from the water bucket to the feed and back again. When he turns, he puts more pressure on the sides of the foot.

“You want to make sure the breakover from side to side is easy, because that’s when the laminae are under the most stress—while turning,” said Morrison. “Some of these horses walk fairly well

A CYTOWAVE SUCCESS STORY

“Our vet said we were at a point where they didn’t know if they would be able to save him or lose him,” Meredith K. said, referring to her horse, Nugget.

Meredith was working with Dr. Elizabeth Rees, a Cytowave representative, on a suspensory injury for another horse. Their conversation turned to Nugget and his severe laminitis.

“Nugget had been diagnosed with laminitis and subsequent founder approximately eight months ago,” Rees said.

Rees suggested trying the unit on the laminitic horse. “While I was there, Nugget received two treatments and after only those two treatments, Nugget was able to ambulate to his stall as well as in his stall. Meredith has continued to treat Nugget and reports he has improved significantly.”

Flash forward to May, and Meredith’s veterinarian was sufficiently impressed with Nugget’s healing that he said they could start turning him out. Nugget is down to a half gram and one 30-minute treatment a day. Nugget is getting his life back.

Meredith knows had she had continued treating with other modalities she had used, she would not have been able to get him back so fast.

“We’re so happy he’s walking around out in the field and grazing. We’re amazed with what Cytowave has done,” Meredith said.

Melissa Peters, a Cytowave representative, said, “We just began our laminitis trial with three well-known equine facilities, so the timing of this case underscores we’re moving in the right direction.”

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FETLOCK LAMENESS

The most common joint involved in Thoroughbred racehorse lameness is the fetlock, a focus of treatment and research at New Bolton Center. In the past decade veterinarians have recognized a condition of the racehorse fetlock known by several different names: repetitive osseous stress syndrome (ROSS), maladaptive bone remodeling, distal cannon bone bruising, cumulative stress induced bone injury (CSBI), and palmar osteochondral disease.

Despite its many names, this condition presents as poor performance with a short, choppy gait and mild to moderate lameness. Pain on palpation and flexion tests are inconsistent, and many horses don't show excess fluid in the joint.

Radiographs often are inconclusive but in more-advanced cases can show sclerosis or lysis (increased or decreased bone). Diagnosis can be confirmed with nuclear scintigraphy (bone scan) and diagnostic analgesia (local blocking). More-advanced imaging with computed tomography (CT) and magnetic resonance imaging (MRI) may provide more information and help with prognosis.

Treatment consists of rest followed by paddock turnout to allow the bone to remodel appropriately. Besides conservative therapy there are surgical techniques—including drilling a hole across the condyle to “decompress” the bone, and placing a screw across the condyle to “stimulate” healing—that are showing some early success.

Horses can return to racing, but many have shortened careers.

By Dr. David Levine, staff surgeon, New Bolton Center, University of Pennsylvania School of Veterinary Medicine (Penn Vet)

in a straight line, without pain, and it's the turning that really shows the soreness. You need to roll/bevel the sides and edges of whatever support you have on the foot—whether it's a boot or cuffed shoe. You want to facilitate medial/lateral breakover.”

The laminae are designed to resist tension, but twisting puts a lot of shear force on these structures.

“This is what we do during the acute phase, along with treating very aggressively with anti-inflammatories,” Morrison said. “There are many drugs that can be used for this. I generally use Bute or Banamine and also treat with DMSO for three days.

“Sometimes we put the horse on pentoxifylline, a drug with multiple effects, one of which enables blood cells to travel more readily through damaged blood vessels. The blood cells get a more elastic shape so they can squeeze through compressed areas a little better.”

Pentoxifylline can affect inflammatory mediators also, which can help a horse with laminitis because blood circulation to the hoof is compromised.

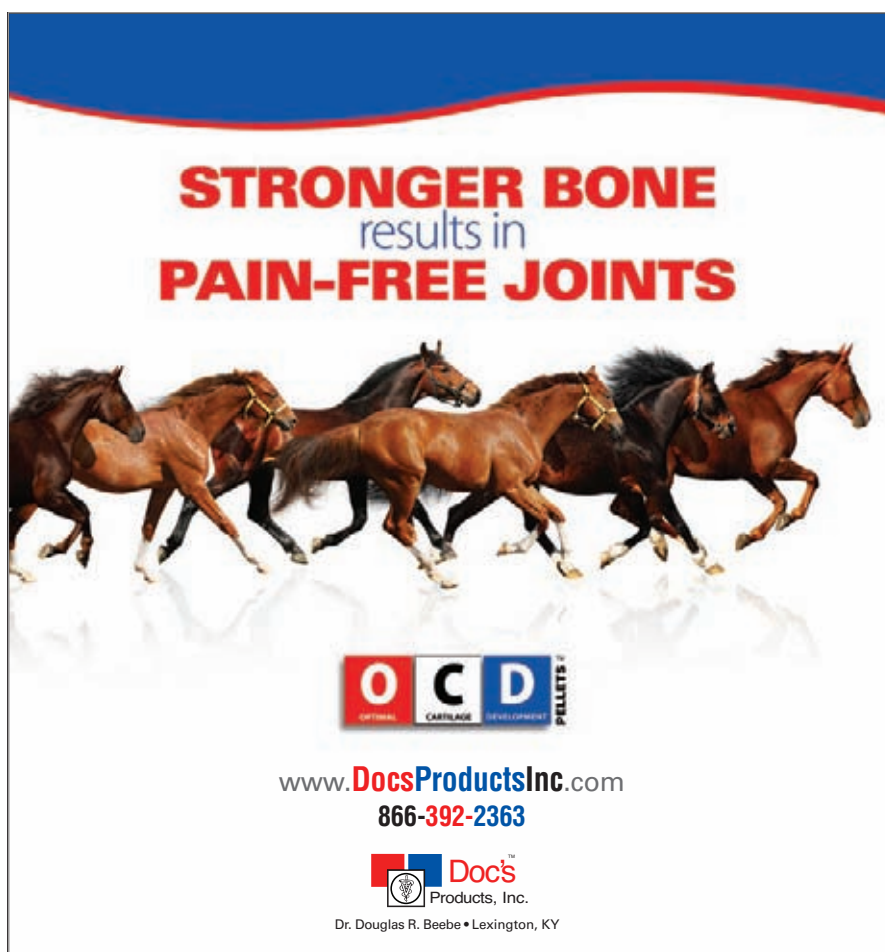
Morrison noted most laminitis cases show improvement within 72 hours. After that, they enter the subacute phase and recover. Because more than 80% of horses can recover with conservative treatment of confinement, foot support, and medication, it is crucial to treat the horse early.

“When you examine the horse, go into the stall,” said Morrison. “Don't move him any more than necessary. Thoroughly examine the feet, since there are other things that can make horses sore in both front feet. You can put the horse in a boot on one foot, with a soft pad, then pick up the other foot to do a quick examination with hoof testers to see if he's sore in the toe.

“I've seen horses with bilateral abscesses, some with fractures in both front feet, and some with severe heel pain in both front feet. So I use hoof testers and shoot some radiographs really fast—and not just assume that it's laminitis. Be efficient and don't hold up a front foot very long. If the horse is sore and wants to take his foot back, give it back to him and give him a break.

“We do an examination to rule out other possible causes, and if we are sure it's laminitis, we create a foot support, leave the horse in the stall, and put him on drugs.”

If the horse gets on the road to recovery within 72 hours, you must take care of how you rehabilitate them and eventually reintroduce them back into activity. **BH**



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