Learn About Chronic Laminitis in Horses

The risk, prevention, symptoms and treatment of this hoof disease
A Note From The Editor

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MyHorse Daily
Chronic laminitis affects the same hoof structures as the acute form of the condition but with a very different pathology.

As an owner or rider, you owe it to your horse to be familiar with this more insidious form of this dangerous yet preventable condition.

Adapted from an article by Christine Barakat

There's no mistaking a case of acute laminitis. This painful hoof condition, which made national headlines when it claimed the lives of famed racehorses Secretariat and Barbaro, comes on suddenly and quickly causes debilitating pain, endangering not only a horse's future soundness, but his life.

Another form of the condition, chronic laminitis, develops more slowly and subtly. In fact, it can go unnoticed for months or even years. It can strike any horse—even yours. So it's important to learn about not only its symptoms, but its causes, treatment and prevention.

Subtle Signs

Slow-onset laminitis can eventually cause devastating damage but its initial signs are often so subtle that they pass unnoticed or are mistaken for some minor problems.

"It's not at all unusual for a good horse owner to miss one of these cases," says Chris Wickliffe, DVM, of Gresham, Oregon. "More than a few times I've radiographed a horse's hooves, looking for another problem, and found rotation of the coffin bone that could have only been caused by laminitis, but the owner can honestly not recall when it might have occurred. They aren't negligent—they just didn't know what they were seeing at the time."

Unfortunately, each day that slow-onset laminitis escapes notice increases the chances that the condition will leave behind permanent damage to the internal structures of the hoof. In fact, say the experts, the consequences of multiple subtle cases of laminitis are often more severe than those associated with a single drastic event.

All of which makes it important to understand the nature of slow-onset laminitis and learn to recognize its signs. There are no guarantees, of course, but if you become familiar with the condition, you'll be better able to spot trouble early and summon your veterinarian before damage is done.
Risk Factors

Slow-onset laminitis and sudden, severe laminitis both start with an overload of carbohydrates, a runaway fever or some other systemic insult. This triggers a cascade of events that begins with swelling of the sensitive laminae within the hoof. If the swelling is severe and/or prolonged, these tissues, which anchor the coffin bone to the inside of the hoof wall, begin to stretch or break. If this happens, the coffin bone—detached from its moorings—is pulled downward by the deep digital flexor tendon. The exact details of this process are still under investigation, but the resulting rotation, which is permanent, is commonly called “founder” (see “Laminitis Lingo” box).

Exactly why some cases of laminitis strike hard and fast while others unfold slowly and insidiously is unclear, but veterinarians who have dealt with both scenarios have some ideas. “In some cases, there is a definite connection between the severity of the disease and the initial insult,” says Brady Bergin, DVM, field veterinarian with Oregon State University. “A horse who breaks into a feed room and eats many pounds of grain or a mare with an untreated retained placenta will likely develop a severe case of laminitis. On the other hand, a horse who gets a bit too much spring grass one day may have only a mild case.”

Either way, Bergin says, identifying the cause of laminitis can be critical to developing a treatment plan: “Laminitis is a systemic disease that can affect more than just the feet. Many times in order to successfully treat it, we must

Clockwise from top left: Horses with fatty deposits are often candidates for laminitis; grain should be limited in an at-risk horse’s diet; muzzles can help prevent overeating; and testing can identify forage that is too rich for laminitis-prone equines.
eliminate the conditions that caused it.”

A horse’s conformation may also be a factor, says Wickliffe, who worked as a farrier for 10 years before becoming a veterinarian. “A horse with a big hoof-to-body ratio is typically going to do better,” he says. “Hooves with more surface area on the ground and a nice concavity of the sole are better designed to deal with problems. A big Thoroughbred with pancake hooves where the coffin bones are naturally closer to the ground or a Quarter Horse with tiny hooves under a big body just doesn’t have that much room for error.”

By contrast, ponies—with their small bodies over relatively large hooves—generally cope better. “A larger percentage of ponies tend to develop laminitis than horses; that might be because of genetics or our tendency to overfeed them, but they also recover from laminitis pretty well,” Wickliffe says. “They typically have good hooves that are in good proportion to the rest of them. This smaller body mass means less pull of the deep digital flexor tendon, so less rotation.”

The Endocrine Component

Two conditions known to increase the risk of sudden laminitis—Cushing’s disease and insulin resistance—also make horses more susceptible to the slow-onset form of the condition.

An endocrine disorder of older horses, Cushing’s disease occurs when the adrenal gland is overstimulated and the body produces too much cortisol. Common signs of Cushing’s include a persistent long coat, increased water consumption and a weak immune system. Laminitis is a frequent complication: “I think it’s the general metabolic upheaval in these horses, combined with the constant natural overproduction of steroids that changes blood flow to the laminae,” says Bergin. “Laminitis often sneaks up on these horses, which can be devastating, even in minor cases if they are older and have other health considerations.”

Your veterinarian can test your horse for Cushing’s disease and begin treatment with medication to control it, and in turn reduce his risk of laminitis.

Insulin resistance also known as metabolic syndrome, prevents a horse from utilizing glucose properly. “These are typically the obese, cresty horses,” says Wickliffe. “But we are learning there’s a lot more to it than just being overweight.”

Bryan Fraley, DVM, a podiatrist with Rood and Riddle Equine Hospital in Lexington, Kentucky, suspects lifestyle factors increase the laminitis risk for many insulin resistant horses. “We see a lot of very well-cared-for broodmares slowly develop laminitis,” says Fraley. “I suspect that much of the problem is a subclinical metabolic problem, such as insulin resistance. They get a bit too many carbohydrates each spring with the green grass and the annual flare-ups slowly lead to more and more damage.”

Research is underway to provide a more accurate picture of how insulin resistance occurs and can be managed in horses. In the meantime, your veterinarian can do a series of blood tests to determine if your horse has the condition. But even without a definitive diagnosis, Wickliffe advises erring on the side of caution: “Consider any horse who is an ‘easy keeper’ to be at higher risk of laminitis, both sudden and slow-onset, and manage them very carefully.”

Insulin resistant and overweight horses benefit from regular, moderate exercise, a low-carbohydrate diet (meaning few or no concentrates) and limited access to lush grass in the spring and fall re-growth periods. “Grazing muzzles can be helpful in some of these cases,” says Bergin. “They allow a horse to get all the social and physical benefits of living on pasture, but without the risk of overeating grass.” He adds that testing hay or pasture can be useful to identify forage that is too rich for at-risk horses.

Laminitis Lingo

As the study of laminitis progresses, a common language has emerged among researchers and veterinarians to describe the different phases of the disease. In some cases, the terms may vary slightly from the terminology used by a horse owner.

In veterinary parlance, “acute laminitis” refers to the beginning stages of the disease, when the laminar tissues are swelling. This can last anywhere from 23 to 72 hours. If the swelling subsides with no complications, the horse may be said to have “subacute laminitis.” When veterinarians refer to “chronic laminitis,” they are speaking of the death and detachment of the laminae and subsequent rotation of the coffin bone that follows. In lay terms, this deformity is often referred to as “founder.”
Mistaken Identity

The main reason slow-onset laminitis so often progresses without notice is the similarity of its signs to other more common problems.

Periodic foot soreness

Suspect laminitis if:
- The soreness occurs at the same time every year;
- the horse is lame on hard ground but appears sound when on soft, sandy footing.

A horse who walks gingerly over hard or gravel surfaces may simply have tender feet. But there’s a chance he has laminitis. Walk the horse over different types of footing. If he appears sound on sandy or soft ground, but footsore over paved surfaces, call your veterinarian to rule out subtle laminitis. On yielding footing, the hoof sinks deeply enough to push dirt up against the underside of the coffin bone, providing support that eases the pain of rotating bone. In contrast, an unyielding surface offers no sole support and each step pulls on the damaged laminae inside the hoof capsule.

Foot soreness is probably the most often overlooked sign of chronic laminitis, says Wickliffe. “I just saw a horse who would get footsore every winter, just as he went back into training for the show circuit,” says Wickliffe. “We radiographed him and, lo and behold, he had 18 degrees of rotation. He had worked for three years like this, coping amazingly well on softer surfaces, but when he went on frozen, hard ground it was just too much.”

Bergin has witnessed the same seasonal scenario, but the tip-off was grazing opportunity rather than footing. “I’ve seen horses that were sore in the spring and the client will happen to mention that it happened the same time...”

Best Defense: Good Farrier Care

Poor, inadequate hoof care can lead to slow-onset laminitis, warns Bryan Fraley, DVM podiatrist with Rood and Riddle Equine Hospital in Lexington, Kentucky. “Whenever you shoe a horse, you suspend the coffin bone off the ground, which places more load on the laminae. That can reduce the growth and thickness of the sole. All of this can eventually contribute to insidious laminitis.”

He adds that poor or irregular trimming can have similar consequences in an unshod horse. “You can trim a horse just as badly as you can shoe him,” he says.

Regular care by an experienced farrier is your best defense against such cases of insidious laminitis, says Fraley, but you’ll also want to keep an eye out for any of the following signs of brewing trouble:

- chronic bruising or abscesses
- a slightly dished appearance of the hoof wall at the toe
- toe cracks
- thin, flat soles
- bulging or prolapsed soles
- growth rings that are wider at the heel than the toe.

“All of these are red flags that warrant investigation by your veterinarian and farrier,” Fraley says. He also recommends having radiographs of a horse’s front hooves—or all four—done annually: “For about $100, you can have a very clear record of any changes that might be going on inside the hoof. A good farrier will be thrilled to have these and will know how to interpret them.”
last year but it went away on its own,” he says. “Usually we find that the horse is developing very subtle laminitis every spring from the lush new grass.”

**Hoof abscesses**

Suspect laminitis if: evaluation with hoof testers suggests that the pain is limited to the area just in front of the frog and no pocket of pus is found.

An abscess usually makes a horse lame in only one hoof, but that important diagnostic clue can be difficult for an owner to discern, particularly if the horse is reluctant to move.

“How hoof testers can be a big help in separating abscesses from laminitis,” says Bergin. “A horse with an abscess will typically have a very specific painful spot on the margin of that sole, heel or frog. If you investigate that area carefully with a hoof knife, you’ll find the pocket of pus and the horse is much better once it’s drained. A horse with laminitis is typically sensitive over the sole, in the area associated with the tip of his coffin bone, but the pain isn’t always limited to that area. Some cases can be painful across the sole from one side of the hoof to the other.”

Complicating matters is the fact that a horse who has foundered will be prone to abscesses the rest of his life.

“The spaces created when the laminae tear way are perfect pockets for abscesses to form in,” says Wickliffe. “You need to be cognizant of that to determine which cases are abscesses and which are recurrent laminitis.”

**White-line disease**

Suspect laminitis if: the horse becomes very lame, or topical antibacterial or antifungal treatments don’t seem to help.

The exact nature of white-line disease has been debated among veterinarians and farriers for years. In general, however, the disease leads to chalky, crumbly tissue in the stratum medium layer of the hoof—the “white line”
visible on a newly trimmed unshod hoof between the sole and hoof wall. In advanced cases, the white line degrades to the point that a hollow space forms between the inner and outer layer of hoof the hoof wall and the wall itself pulls away from the rest of the foot.

“I think white-line disease and chronic laminitis are really tied in with each other,” says Bergin. “It seems that chronic destruction or weakening of the laminae from white-line disease can allow rotation of the coffin bone to occur. I will always radiograph the feet of a horse with white-line disease to check for rotation.”

**Slow recovery or a setback after a major illness or trauma**

*Suspect laminitis if: the horse becomes lame or shows a marked reluctance to move without other signs of tying up.*

Sudden and severe laminitis is often a complication of serious illness, particularly one involving high fever or endotoxemia. But the subtle form of laminitis can also follow illness. It’s wise, then, to be suspicious of any lameness that develops subsequent to illness or seemingly unrelated injury.

“Twice I’ve seen laminitis cases develop after trailer accidents,” says Wickliffe. “These horses weren’t seriously injured in the accident, making everyone breathe a little sigh of relief. Then two or three days later, they developed laminitis. I suspect the stress of the accident changed the gut flora, leading to endotoxemia or high [natural] steroid release.”

**The Damage is Done**

If you’re lucky you’ll be able to spot the signs of laminitis early enough to arrest its progression with anti-inflammatory medications and appropriate hoof care. But even if you don’t call the veterinarian until coffin-bone rotation has occurred, there’s no need to despair. The guidelines for managing the aftermath of slow-onset laminitis are the same as for the acute condition, but the outcome is often better.

“With the help of a good veterinarian and farrier, you can often turn these cases around quickly—sometimes in three or four shoeing cycles—assuming, of course, you’ve also addressed the underlying issue that brought on the laminitis,” says Fraley.
The aim of trimming and shoeing horses with low-grade laminitis, he adds, is to minimize forces on the laminae and improve blood supply to the tissues that produce hoof wall and sole. “This can be done with a variety of shoes and trimming techniques that encourage the horse to load the healthier heel region of the hoof. It’s also important to roll and/or rocker the toes of the shoes slightly to ease the breakover and minimize forces on the laminae.”

Even with a good outcome, Wickliffe emphasizes, a horse is never the same once coffin bone rotation occurs. “The bone never goes back,” he says. “There is no trim or shoe that can do that. As the new hoof grows down, it orients itself to the new position of the coffin bone. You also get new attachments of the laminae which aren’t as strong as the original.” When repeated bouts of mild laminitis go undetected, he adds, this natural repair process can take a long time. “It’s always better to catch it the first time, when you limit damage to the laminae. Things get complicated when you are catching it on the fourth or fifth or even 10th go-round.”

When your horse is just slightly sore or a bit off, your first worry probably isn’t laminitis. But, given the devastation that even a mild case can bring, it’s wise to rule out the condition—just to be safe. “Laminitis needs to be on your radar,” says Wickliffe, “and you need to realize that it might not present itself in the classic, textbook manner. It’s a complex condition that doesn’t always stick to the rules.”

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