

Laminitis

Laminitis is a “crippling lameness” that shortens horses’ working lives and sometimes requires euthanasia

Overview

A horse’s entire weight is supported by its hooves. This is made possible by two sets of about 600 tiny, leaf-like tissues within each foot called laminae, which suspend the coffin bone within the hoof. The outer (epidermal) laminae protrude inward from the inside of the hoof and interlock with the inner (dermal) laminae, which are attached to the coffin bone (also called the third phalanx or pedal bone).¹

Laminitis results in failure of this laminar attachment to some degree. Thus, the coffin bone is no longer securely anchored within the hoof. The horse’s weight plus the forces on the hoof during locomotion can drive the now unstable coffin bone toward the ground (“sinking”)² and/or cause it to rotate within the hoof, depending on whether the laminae fail all the way around the hoof or just near the toe.

Ultimately, sinking and/or rotation of the coffin bone can cause it to penetrate the sole. Veins and arteries in the foot are also torn and crushed during an episode of laminitis.² Laminitis is a “crippling lameness” that shortens horses’ working lives and sometimes requires euthanasia.^{1,3}

What Causes Laminitis?

One of the frustrating aspects of laminitis is that there are several distinct causes.^{4,5} Some of the most well-known include:

- Excessive feed intake;
- Toxins in the bloodstream of ill horses (e.g., those with diarrhea, colic, retained placenta, or metritis—uterine infection);
- Trauma (e.g., road founder);
- Excessive weight bearing (e.g., supporting limb laminitis); and
- Corticosteroid-associated laminitis.

Laminitis can also occur in horses with equine metabolic syndrome, insulin resistance, and equine Cushing’s disease



A horse with laminitis might develop visible rings in the hoof wall and might also experience a change of hoof angle if the coffin bone rotates or sinks.

(pituitary pars intermedia dysfunction).

The precise mechanisms that lead to the development of laminitis remain unclear⁵ and research is ongoing. Nonetheless, the changes that occur in the foot during laminitis are similar regardless of the cause.⁶

Clinical Signs

Horses suffering sudden-onset, severe laminitis most commonly show a reluctance or inability to walk; an increased respiratory rate; a glazed, pained expression; a stance with the hind feet under the body and forefeet camped out; bounding digital arterial pulses; and feet that are hot to the touch. In many cases only the forefeet are affected, but laminitis can strike only one foot opposite an injured limb (termed “supporting limb laminitis”) or it can strike all four feet. In the latter case horses can lie down and refuse to stand, or they may stand with all four foundered feet tucked under the center of their body.

If the coffin bone(s) have sunk down, a depressed area immediately above the coronary band is usually visible. Blood can

even ooze from this region.

Clinical signs of milder or chronic cases of laminitis are usually more subtle. Affected horses are also lame, but less so. They’re still in pain and show this by shifting their weight from one foot to another or lifting the feet alternately. These horses are also reluctant to stand on hard surfaces and have warm feet with increased digital pulses.

If you suspect laminitis, call your veterinarian and do not feed or medicate the horse while you are waiting for the veterinarian to arrive. Don’t force the horse to move, but if he is able to walk, slowly lead him into a deeply bedded stall.

Diagnosis

Regardless of case severity, diagnosis involves a veterinarian taking a complete history and performing a physical examination and radiographs (often called X-rays) of the feet to (1) help diagnose laminitis; (2) determine its severity; and (3) devise an appropriate treatment plan. Digital venograms (radiographs of the foot taken with contrast media injected into the veins) illustrate the hoof’s blood supply and can detect early laminar changes before measurable changes appear on radiographs.⁷

Don’t trot the horse to evaluate gait as in a typical lameness exam, because it can cause more trauma to these weakened feet.

Treatment

Sudden bouts of severe laminitis are medical emergencies. According to experts, the three main treatment goals are minimizing mechanical trauma to the weakened laminae, providing pain relief, and treating the primary cause of the laminitis, if possible.²

Minimizing mechanical trauma within the foot via trimming/shoeing is the cornerstone of treatment and ongoing management. In acute cases, soft sole padding

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is often used to support the frog/coffin bone, and heels may be elevated to reduce the pull of the deep digital flexor tendon. For longer-term cases, many tailored hoof care strategies and products can help keep these horses healthy and pain-free.

To control pain, non-steroidal anti-inflammatory drugs (NSAIDs) such as flunixin meglumine (Banamine) or phenylbutazone (Bute) are often given. If more pain relief is needed, other drugs can be used. Caution is warranted, however, as a horse that can't feel foot pain may become too active, further damaging his feet.

Many other drugs have been used in laminitic horses with varying amounts of research support, including dimethylsulfoxide (DMSO), acepromazine, topical nitroglycerin, and pentoxifylline.

Your veterinarian/farrier will help create the best treatment plan for your horse.

Prognosis

The prognosis is highly variable and dependent on the case duration, severity, number of affected feet, and underlying cause. Key to determining prognosis is serial foot radiographs (i.e., weekly for several

weeks) to evaluate the foot's progress and adjust treatment plans as indicated.

Tips for Prevention

While not all cases of laminitis can be prevented, you can decrease the chances of your horse foundering. For example:

- Maintain an appropriate body condition, particularly in ponies, "cresty neck" horses, and insulin-resistant and untreated Cushing's horses;
 - Restrict intake of rich grass (e.g., in the spring and fall) via grazing muzzle;
 - Consult with a nutritionist or veterinarian to minimize or eliminate concentrates (grain) from the diet if possible;
 - Store concentrates where horses can't get at them, even if they get loose;
 - Don't give pharmaceutical drugs without first consulting with a veterinarian; and
 - Provide regular, professional foot care (corrective trimming and/or shoeing).
- Cryotherapy (cold therapy) can help prevent laminitis if used early enough in horses at risk of an acute episode, such as those that have gotten into a grain bin or have retained placenta/severe colic.⁸ Once a horse has had laminitis, he might

be at higher risk for future episodes. Manage these horses appropriately to avoid more problems. 🐾

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Further reading and free lameness e-newsletter: www.TheHorse.com/laminitis.

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