A sore subject

Confused about what happens to a horse's foot when he has laminitis and why this condition is such an issue in the autumn? Vet Matthew Tong from Fellowes Farm Equine Clinic explains

Laminitis is a devastating and debilitating disease, and is one of the most common causes of lameness in horses and ponies in the UK, posing a major threat to wellbeing. It can result in permanent lameness and, unfortunately, sometimes euthanasia is necessary due to unrelenting pain within the hoof, despite the best efforts of veterinary surgeons, farriers and owners.

Laminitis should always be treated as an emergency. Early, appropriate treatment will give the best chance of recovery and in very mild cases, appropriate treatment will resolve the problem with no lasting effect. However, if the inflammation is more severe and progressive, the effects can be much more serious.

Our expert

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When a horse gets laminitis, the sensitive laminae become inflamed and painful

The affected structures

An appreciation of the anatomy of the normal foot is important in understanding the processes and changes that occur in the laminitic foot. It also explains why laminitis is such a painful condition.

The pedal or coffin bone does not rest on the sole of the hoof as our foot does inside a pair of shoes, it is suspended a few centimetres above it. It is held here by laminae (sometimes also referred to as lamellae), which are very specialised structures within the hoof that resemble the leaves of a book.

There are two layers of laminae – the sensitive and the insensitive laminae. The sensitive laminae contain blood vessels and nerves, and cover the pedal bone. They interlock with a corresponding series of leaf-like insensitive laminae, which lacks blood vessels and nerves, and cover the inside of the hoof wall. When these two layers of laminae are interlocked, they act like biological Velcro and form a strong bond that is difficult to break. This helps suspend the pedal bone within the hoof and it is this interface between the two layers of laminae where laminitis strikes.

Lasting damage

When a horse develops laminitis, the sensitive laminae become inflamed and painful – 'itis' is a suffix that denotes inflammation, so laminitis means inflammation of the laminae. This inflammation causes the interface between the two sets of laminae to be weakened, resulting in instability of the pedal bone within the hoof and varying degrees of pain, from moderate discomfort to excruciating pain causing obvious lameness.

It may be the case that by the time the clinical signs of pain and lameness are noticed, irreversible damage within the hoof has already begun. In severe cases, the damaged laminae may become so weakened that they are no longer able to suspend the pedal bone in its normal position and the entire bodyweight of the horse is, therefore, being supported by the painful sensitive laminae.

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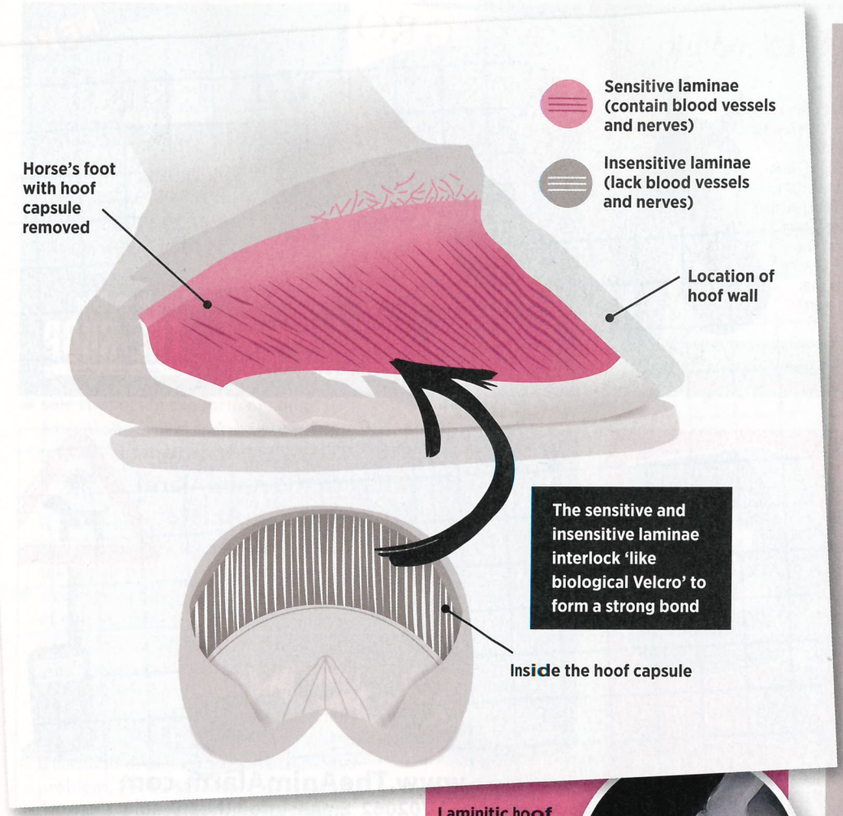
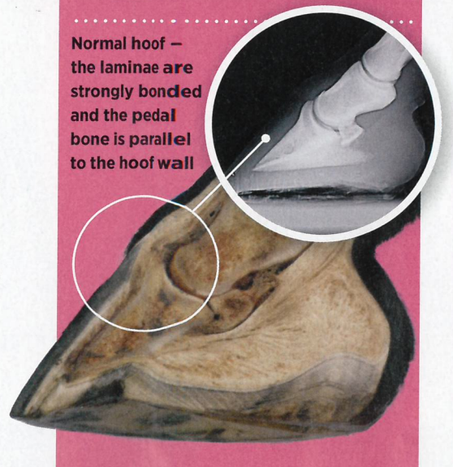




Long-term changes in the anatomical position of structures within the hoof can occur as the pedal bone rotates and sinks within the foot, crushing soft tissues, and damaging blood vessels and nerves. These changes can also cause adverse changes in hoof horn growth. In severe cases, penetration of the sole by the tip of the pedal bone can follow, with fatal consequences.

Even in chronic cases, gradual rotation of the pedal bone can occur and cause irreparable damage to the bone, with increasing levels of pain and discomfort, and more chronic distortions in the shape of the hoof. Once the feet have undergone chronic laminitic changes, a full recovery is unlikely, leaving the horse with permanent foot impairment that requires careful ongoing management to prevent further degenerative changes and pain.

Underlying causes

For a long time, laminitis was presumed to be a disease that affected small, fat, native ponies, mainly when they ate too much grass. However, over the last 5–10 years, our understanding of this complex disease has changed. We have come to understand that in the majority of cases, laminitis is a symptom, not a disease itself, and that while grass plays its part, it is in a very different way to what we previously believed.

By recognising laminitis as a symptom, we now understand that in order to resolve laminitic episodes as quickly as possible and minimise the risk of recurrence, it is vital to identify the underlying cause. While we know that grass is often the final trigger to a laminitic attack, recent studies show that more than 90% of laminitis cases are the result of an underlying hormonal disease or imbalance, namely PPID (pars pituitary intermedia dysfunction, also known as Cushing's disease) and EMS (equine metabolic syndrome).

This is the reason that your vet will now normally recommend blood testing your horse to check for these endocrine disorders very early on in an episode of laminitis. PPID is tested for by taking a single blood sample and checking the ACTH levels. EMS requires a dynamic blood test, where the insulin levels are checked both after the horse has been starved and two hours after he has been given a measured dose of glucose. Once we understand the underlying problem, we can target treatment for these conditions to help control and, hopefully, prevent future episodes of laminitis.

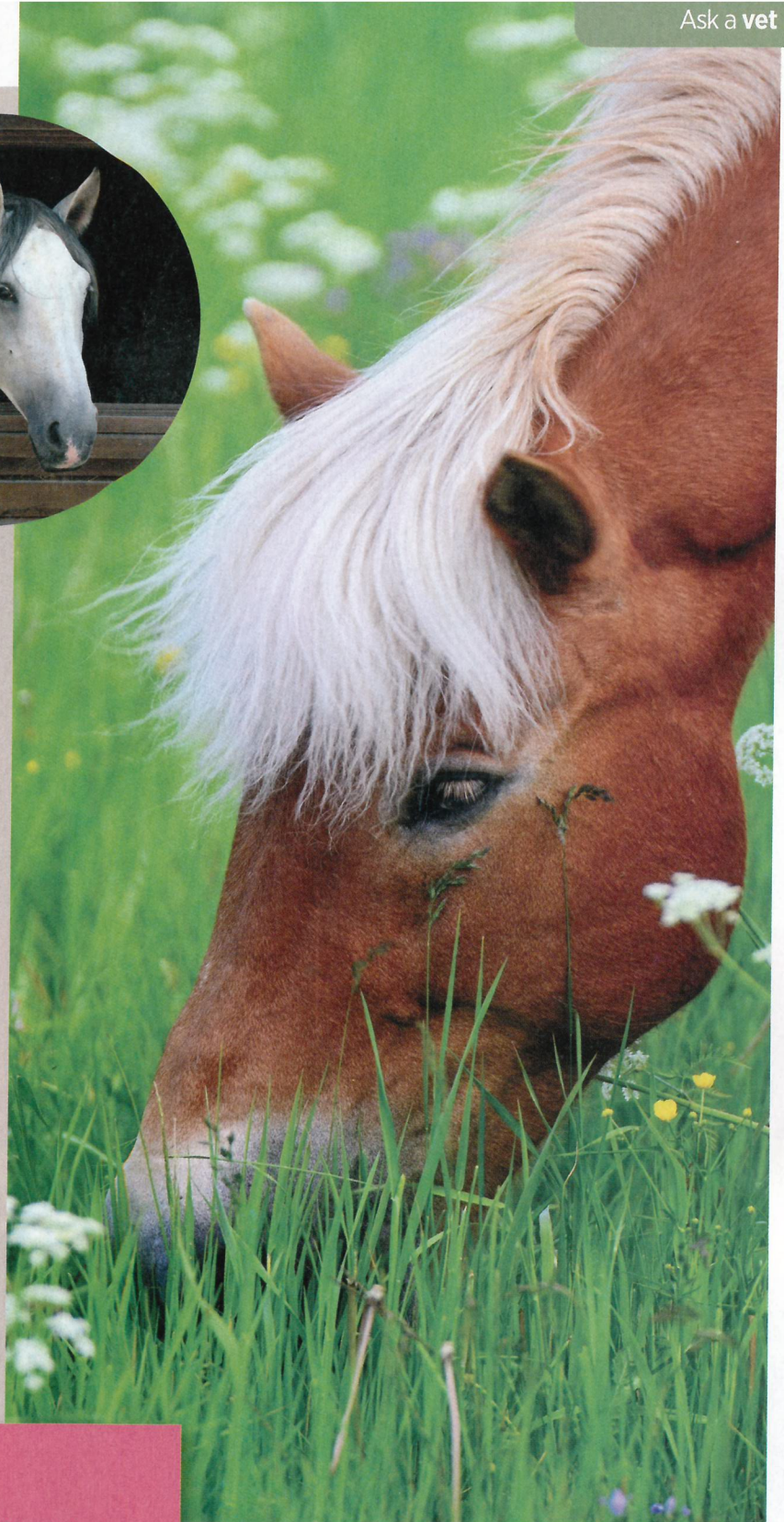
It is also important to determine the severity of the laminitis, so the position of the pedal bone is often assessed using X-ray. This gives valuable information not only to your vet, with regards to prognosis and treatment, but also to your farrier, who can shoe the horse to provide optimal support.

Soothing sore feet

Specific treatment regimes vary from patient to patient, but almost always comprise of...

Box rest is essential for laminitics

- non-steroidal anti-inflammatory drugs (NSAIDs) that help reduce the inflammation and, therefore, the pain
- sole support in the form of pads, special shoes or a deep bed to help prevent or reduce rotation and sinking of the pedal bone
- strict box rest to reduce movement, which is necessary to reduce the forces trying to pull the laminae apart each time the horse takes a step
- a change in diet to reduce the intake of non-structural carbohydrates – for example, cutting out cereals and feeding only soaked grass hay (a high-quality balancer will be required to supply suitable levels minerals, vitamins and protein)
- treatment of any underlying endocrine problem. For PPID cases this is a drug called pergolide. EMS is similar to type II diabetes in people and is generally associated with obesity, which unfortunately makes it a much more complex and difficult disease to manage. The mainstay of treatment is weight loss, so a strict diet is advised. A drug called metformin is sometimes prescribed to help EMS cases in the early stages, especially when the horse is unable to exercise because his feet are too sore.



When the grass is greener

So where does grass come into the picture? Grass has traditionally been blamed for causing laminitis and for some time this was thought to be because horses were eating too much of the water-soluble sugars, called fructans, contained in grass.

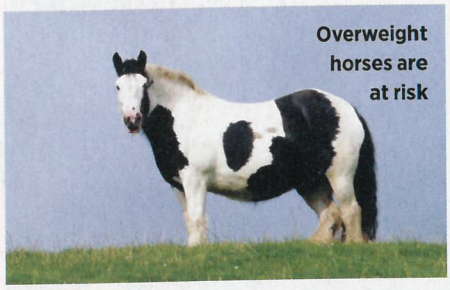
Since most horses will eat a similar amount at grass per kilogramme of body weight, this simplistic idea did not explain why you can turn a Thoroughbred and a Shetland out on the same field and one would have a problem while the other was fine. We now realise this is because laminitis-prone horses are super-sensitive to the sugars in the grass, meaning they have to eat far less than a non-laminitis prone horse in order to induce a bout of laminitis.

Grass has traditionally been blamed for causing laminitis

Why the autumn?

In the past, laminitis was thought to be a spring problem, when the grass tends to be more lush. So why do we have to be vigilant as we enter the late summer and autumn months? Well, recent studies into some of the risk factors that we now know can trigger laminitis have shown a number of common scenarios we recognise in the autumn period.

Horses who are overweight or have recently gained weight can be triggered into a full-blown episode of laminitis if they are given access to lusher grass. In autumn, flushes of grass growth often occur



Overweight horses are at risk

following a period of wet weather. This sudden growth of grass often contains a higher level of soluble sugars, which is enough to tip the balance in a horse who has been on the brink of a laminitic episode up until that point.

In addition, we know that a little later in the autumn, once the frost starts to bite, the frost itself can cause a short-lived flush in the fructan levels in grass in the morning, which can be just enough to spark off an episode of laminitis.

Prevention is better than cure

To prevent relapses of laminitis, it is important to be meticulous when making changes to your horse's daily management. Although you may need your vet's advice for some of these changes, there are easy steps you can take yourself, including...

- using electric fencing to divide the pasture into smaller paddocks and restrict access to grass, particularly at the critical times of rapid grass growth when the sugar levels are likely to be at their highest
- turning your horse out into a school or other enclosure without grass
- preventing access to frosty paddocks
- restricting exercise on hard surfaces
- exercising your horse daily

Your vet can advise you on other important preventative measures, which include...

- a diet that provides adequate nutrition, including minerals, vitamins and protein, but without excess carbohydrate
- weight loss if your horse is overweight
- routine foot care, including regular trimming
- nutritional supplements to promote healthy hooves

Beware frosty grass