

# LAMINITIS

Laminitis is a very common and painful condition that typically affects overweight ponies it can, however, affect all types of horses as there are many predisposing causes in addition to obesity.

It requires prompt attention, advice and first aid treatment from a veterinary surgeon.

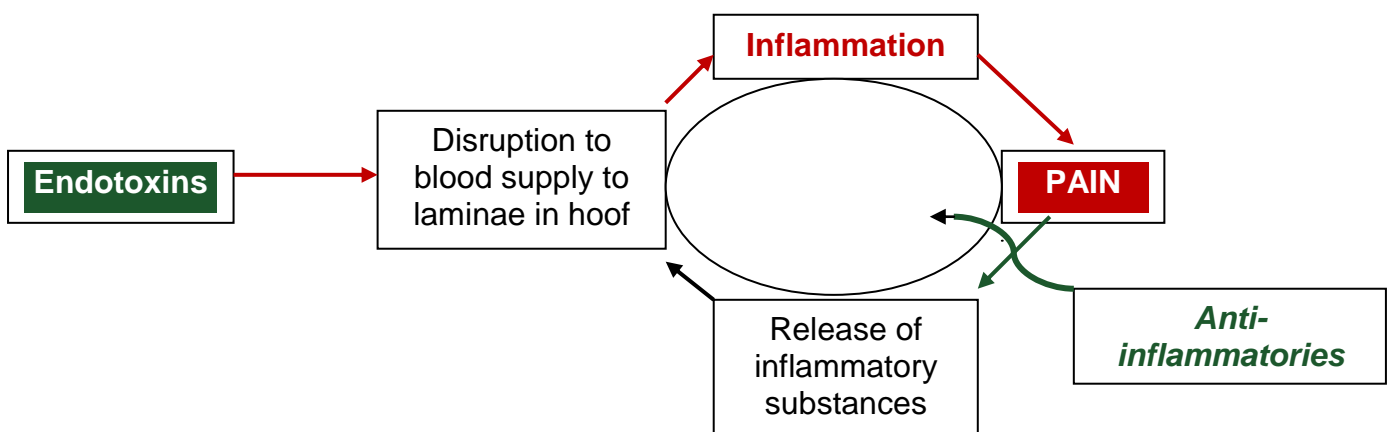
Laminitis literally means inflammation of the laminae in the foot.

The laminae are the soft tissue structures within the hoof that attach the hard horn of the hoof wall to the pedal bone inside and they support and transfer the horse's weight from the pedal bone to the hoof wall.

The laminae become inflamed when the internal systems become 'stressed' or due to a release of substances called endotoxins from the gut, uterus. The endotoxins cause impairment of the blood flow to the laminae which results in an inadequate supply of oxygen and nutrients to these laminae. The laminae then start to 'die off' which causes inflammation and swelling of these soft tissues against the hard hoof wall this gives rise to the severe pain associated with this condition when the laminae die, they can no longer hold the pedal bone in its correct place and the bone may then rotate or sink. Pain results in more inflammatory substances being released by the body, this causes a vicious circle of inflammation causing pain and pain resulting in more inflammation and therefore more pain.

This highlights the great importance of anti-inflammatories/painkillers in controlling this condition as shown in the diagram below.

## Mechanisms involved in laminitis



## Stages of laminitis

- 1) Developmental laminitis - this is the time period between the predisposing event/factor and the first appearance of lameness. Usually this lasts approx. 40 hours and the horse does not show any symptoms during this period. The severity of laminitis can be greatly reduced if the predisposing event is known and the horse is appropriately treated during this period.
- 2) Acute laminitis – this is when the laminae become inflamed and the signs of pain are seen in the horse, often including the following - difficulty walking especially when turning, rocking back on their heels, increased 'bounding' pulses to the feet and a marked reluctance to pick up the feet. This stage has two possible outcomes:
  - Horse makes it through the next 72 hours with no physical or radiographical collapse – the disease moves into the subacute stage
  - Horse suffers rotation or sinking of the pedal bone due to the breakdown of the laminar bonds between the hoof wall and the pedal bone. The disease then moves into the chronic stage. The x-ray below shows rotation of the pedal bone, in a healthy foot the front of the pedal bone should be parallel to the front wall of the hoof.



X-ray of a horses foot with chronic laminitis showing rotation of the pedal bone.

- 3) Subacute laminitis – this lasts 8-12 weeks and where there is no digital collapse, the horse is considered to be recovering from the damage done during the developmental and acute stages.
- 4) Chronic laminitis – the horse has suffered some degree of digital collapse during the acute stage resulting in long standing changes, regardless of how long it displayed signs of pain during the initial onset of the condition

In the worst cases of digital collapse there is a risk of the pedal bone penetrating the sole of the foot, in these cases the prognosis is hopeless and euthanasia should be performed on humane grounds.

## Causes of and predisposing events giving rise to laminitis

- Obesity – closely associated with laminitis- metabolic changes in overweight horses are complex and are currently being researched, these are often referred to as 'peripheral Cushings' or more recently 'equine metabolic syndrome'.
- Equine metabolic syndrome – a recently recognised very complex condition, insulin resistance and lifestyle e.g. lack of exercise and an overly rich diet are key factors to result in laminitis.
- A carbohydrate overload - over-eating lush grass (especially if rich in fructans) or excessive quantities of concentrates.
- Cushings disease – a hormonal disorder common in older horses and ponies caused by a benign pituitary tumour.
- Trimming or shoeing – if too long is left between shoeings and the toe is allowed to grow excessively long it may lead to the onset of laminitis.
- Excessive stress – causes a release of cortisol which is contributory to laminitis.
- Severe Infections – bacteria can cause the release of endotoxins into the blood stream- a retained placenta is the most common cause of this.
- Concussive injury – predominately horses with flat feet, low heel and long toes and those working repetitively on hard surface.
- Overloading – severe lameness in one limb such as a fracture resulting in overloading in the other limb triggering laminitis in the weight bearing limb.
- Treatment with anti-inflammatory corticosteroids can trigger laminitis on RARE occasions.

Laminitis most commonly affects the front feet but hind feet can also be either in conjunction with the front or on their own.

The severity of the clinical signs is very variable with laminitis:



Horse with laminitis shifting its weight off its front feet.

### 1. Mild Cases:

- mild lameness
- shortened stride length
- uncomfortable when turning
- increased digital pulses
- pain when hoof testers applied

### 2. Severe Cases:

- Reluctant to move/stiff gait
- Rocking back on heels
- Severe lameness
- Lying down
- Reluctance to lift legs
- Increased bounding digital pulses
- Shifting weight from foot to foot
- Pain when hoof testers applied

## Diagnosis

Horses with laminitis may show any combination of the above clinical signs. The severity and prognosis of the laminitic episode can only be evaluated by taking x-rays of the affected feet these will indicate the position of the pedal bone within the hoof capsule, so that we can assess whether there is any rotation or sinking of the bone, tearing of the laminae maybe seen as a radiolucent (black) line between the pedal bone and the dorsal/front hoof wall. (Once digital collapse is confirmed the horse/pony is classed as a chronic laminitic and also have an altered hoof shape with long heels and a convex sole rather than a concave sole and will require regular remedial farriery and monitoring x-rays.)

## Treatment

Sudden onset severe laminitis is an emergency and the sooner treatment is started the better the chance of reducing the long term damage to the foot, it is essential to contact your veterinary surgeon for advice and treatment straight away.

It is important to realise that laminitis can progress from mild to severe even if early treatment is instigated. (Early warning signs must be heeded and action taken immediately.)

### **Treatment will vary from horse to horse but in general terms:**

#### *Immediate treatment involves:*

- Removal of the suspected cause/predisposing factor e.g. bring in from grass, reduce concentrate feed, investigation/treatment of 'Cushings disease', treatment of severe infections or removal of a retained placenta.
- A period of box rest on a deep soft bed e.g. shavings or sand.
- Anti-inflammatories/painkillers such as bute.
- Application of frog supports.
- Reduction of food intake.
- Administration of drugs to increase the blood flow to the affected laminae e.g. ACP (sedalin gel)

#### *Longer term treatment involves:*

- Radiography - X-rays will assess the severity of the episode of laminitis and also are used to monitor the horse's progress.
- Remedial farriery e.g. radical foot balancing and trimming, placement of heartbar shoes or imprint shoes— essential in cases where digital collapse has occurred, this will be ongoing with the chronic cases.
- Continued anti-inflammatory medication.
- Strict diet control for the future, low carbohydrate and high fibre diets are preferable for laminitics and to restrict grazing by using small bare paddocks, grazing muzzles and only turnout when the fructans are low in the grass e.g. overnight, preferably between 10pm and 8am.
- Exercise daily once back in work.
- Keep horse/pony at it's ideal weight for height and build to reduce impact and forces on the affected feet.

### *Prevention:*

- Avoid unlimited access to lush pasture, stir grazing, turnout with a grazing muzzle.
- Restrict grazing to overnight to avoid high levels of water soluble fructans in the grass.
- Don't turn out on frosted grass.
- Control obesity by feeding high fibre, low concentrate diets with reduced molasses levels.
- Exercise regularly
- Try to reduce stress level with feed supplements containing higher magnesium levels.
- Ensure prompt treatment of a retained placenta (contact vet if still retained 6 hours after foaling).
- Prompt treatment of infection with appropriate antibiotics.
- Regular farriery

### **In conclusion**

Laminitis can present with a variety of clinical signs from a minor 'unlevelness' to a potentially life threatening severe lameness. Even mild cases can take many months to improve and some horses never regain full soundness. Significant numbers of cases of acute laminitis, associated with toxemia are un-saveable, even with high quality intensive care.

Once a horse has had laminitis it will be prone to laminitis for the rest of their life. Prevention is much better than cure and many, although not all, cases can be prevented by good management.

It is really important to prevent your horse from becoming overweight, we know it's hard but we're here to help. Ask one of us to body condition score your horse if you are unsure about their weight or arrange to bring it to the equine surgery to be weighed on our 'Horseweigh' scales.