

Unravelling Laminitis:

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Spring seems to have finally emerged after a long cold winter. But despite the welcome appearance of bluebells, lambs in the fields and leaves on the trees this time of year sadly brings fear to many horse and pony owners and pain and suffering to anything from 7-13% of equines in the UK.

16,000+ of our horses and ponies suffer from chronic laminitis every year. 15% of acute cases are left permanently lame and regrettably around 10% need to be put down. One feed company has recorded a rise of over 1000% in laminitis advice calls in the last 3 years.

Recent wet weather combined with rising night time temperatures has resulted in very rapid grass growth and this year is looking like being a bad year for the incidence of this crippling disease.

The good news is that very recent research has greatly increased our understanding of the causes of laminitis. Some of this new information was imparted to Vets, Farriers, and horse owners in an excellent series of Laminitis Awareness workshops throughout the country sponsored by feed company Dobson & Horrell and welfare charity World Horse Welfare. Nearly 120 people attended a similar event held by Ledston Equine Clinic recently. It is unusual for such recent research to be available to owners quite so rapidly.

The most important of this research is the understanding that despite most of the previous research concentrating on *inflammatory* causes of laminitis (such as mares retaining placental membranes, severe gastrointestinal disease, black walnut toxicity (in the USA), and carbohydrate overload), ***the vast majority (~70%) of laminitis is due to Endocrinopathic (or hormonal) problems.*** Furthermore, the key hormone involved is ***Insulin*** with a huge proportion of cases being ***“Insulin Resistant”*** – that is the cells of the body fail to recognise circulating insulin causing Insulin levels rise higher and higher to try to keep blood glucose within normal levels. This excess Insulin acts on the lining cells of blood vessels in the horse’s foot causing inflammation and also directly reduces blood flow in vessels.

The biggest cause of Insulin resistance is due to endocrinologically active fat reserves in obese horses. A similar mechanism causes type 2 diabetes in humans which also has blood vessel associated complications

It has also been shown that **Cushings disease** is an age related degeneration of the pars intermedia of the pituitary gland, with some striking similarities to Parkinsons' disease in humans. It is seen in horses and ponies over 15 years of age, but more often over 20. Previous ideas that pituitary tumours were involved appear to be incorrect with enlargements seen due to hyperplasia – compensatory growth due to a fall in hormone production. We also now know that the changes associated with Cushings disease result in development of **Insulin resistance** and this is the likely cause of the chronic laminitis often seen in Cushingoid horses and ponies.

Older studies suggesting a link between *grass fructan levels* and onset of laminitis have now been cast in doubt. New work has shown that while experimentally giving a huge bolus dose of fructans *directly into the hindgut can* cause laminitis, it is unlikely that the amount required could be eaten by a grazing animal even when consuming large amounts of stressed grass.

So why is Insulin resistance so common, particularly in British native pony breeds??? There certainly seems to be a genetic predisposition in these breeds. However, the primary cause has been shown to be **Equine Metabolic Syndrome** – *a syndrome of obesity, insulin resistance, and laminitis.*

Equine metabolic syndrome (EMS) has arisen because *horses have evolved to survive on a seasonal diet where they put fat on in the summer months but lose considerable amounts over winter.* We have upset this natural balance by providing large amounts of high carbohydrate feeds during winter months and rugging horses preventing them burning off this excess dietary energy by keeping *themselves* warm.

Early in the course of EMS horses become Insulin resistant when they become over fat in the summer giving rise to a large increase in risk of pasture-associated laminitis. Eventually they become obese and Insulin resistant all year round, *laminitis can strike at any time of year and is no longer dependant on access to lush spring pasture,* and these become the cases with chronic laminitis that are so difficult and frustrating to treat.

Blood Insulin levels are easily measured and Ledston Equine Clinic is encouraging owners with overweight horses or recurrent laminitis episodes to have this done. *During May 2010 we will be offering our clients a 20% reduction in the cost of Insulin analysis.*

The key part of Equine metabolic syndrome is **OBESITY**. Recent surveys have shown that most owners do not realise their horse or pony is grossly overweight and very prone to laminitis. **70% of owners in one survey underestimated their horses fat scores and 60% of the animals looked at were obese**. This is becoming an increasing welfare problem of epidemic proportions, with so many overweight horses around that obese horses are now recognised as the norm.

Body fat scoring is very useful to assess your horses' condition. *Horses with scores greater than 3.5 are obese* and at greater risk of hoof growth disturbances, laminitis, insulin resistance, skin conditions and chronic musculoskeletal / joint problems. Useful guides can be found at: <http://www.dodsonandhorrell.com/help-advice/weight-loss-gain.html> and http://www.worldhorsewelfare.org/information/right_weight_advice

*Reduction in obesity is the major aim of treating EMS and the prevention of up to 3/4 of cases of laminitis in the UK – some 12,000 preventable cases per year – diet **and exercise** are both vitally important to achieve this.*

Dietary control:

- Remove all grain based concentrates from the diet, *including all treats*.
- Feed soaked hay: soaking for 20-30 min will only stick dust and fungal spores to the hay - fine for respiratory disease but useless for removal of non- structural carbohydrates. *Soaking for 12 hours* will achieve this allowing more volume of hay to be fed.
- Feed a balancer to replenish B vitamins and minerals – but a low sugar one!
- Use forage analysis to look at non- structural carbohydrate levels in your hay or haylage (this should ideally be *less than 10%*) and the dry matter content (DM).
- Use a grazing muzzle and strip grazing to restrict intake OR graze down with other animals (sheep or cattle) OR use lawn mower!
- Limit feed *intake to 2.5% of body weight of Dry Matter* of hay. Obese horses should be restricted to 1.0 – 1.5 %. Do not crash diet your horse – it may cause hyperlipidaemia - a very serious condition that can cause liver failure.
- Weigh **all** feed and hay/haylage given.
- Recognise that weight **loss in winter is normal and essential** to maintain the natural cycle of fat loss, particularly in ponies.
- Seek advise - from your vet - or a reputable feed company or welfare organisation.

Exercise, Exercise, & more Exercise:

This is BY FAR the best way to manage EMS and prevent laminitis.

Exercise reduces blood Insulin levels and Insulin sensitivity, in addition to increasing energy consumption and aiding in weight loss.

A minimum of 1/2hr brisk walking per day is required. Field turnout is NOT adequate. Keeping a diary of exercise routines will help monitor amount done. If your horse is actually going through or recovering from a bout of laminitis exercise may result in tearing of lamellar attachments and should be avoided. Consult your vet and farrier for advice on how and when to start exercise – every case is different – and monitor closely for signs of worsening lameness.

Other Methods:

Re-weigh and fat score horses fortnightly and take photographs.

Keep records of these plus feed weights and any symptoms observed.