

Cushing's Disease

C3

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Common Problems
Fact Sheet 9

Recent surveys have indicated that up to 16% of horses and ponies over 20 years of age have symptoms of developing "Cushing's Disease" or "Cushinoid Syndrome", although the disease can be present in horses as young as 10 years of age. Although Cushing's Disease can develop in most breeds of horses, it is most commonly observed in pony breeds. Connemara ponies and their crossbreeds appear to have the highest incidence, but most pony breeds and Warmbloods are more susceptible than other breeds of horses.

Do You Recognise the Symptoms of Cushing's Disease?

Early signs of Cushing's Disease in horses and ponies as they reach 16-18 years of age, include **patches of long hair along the neck, chin and legs** which takes a longer time to shed, or fails to shed with the full coat in spring and summer. Up to 85% of horses with chronic Cushing's Disease develop a **long, 'shaggy', often curly hair coat** which does not shed during summer, requiring 3-4 clippings per year to keep the aged horse comfortable and clean. As the disease progresses, the animal develops a **'ribby' appearance, slow movement due to lack of energy, a 'pot' belly shape, loss of topline, profuse sweating and excessive drinking and urination, even in cold weather.** About 50% of Cushing's horses develop **recurring sole abscesses, with severe laminitis or founder**, even on a relatively bland diet. The immune system can also be suppressed by the high levels of circulating cortisol hormones.

In the classical form of Cushing's Disease, most chronic sufferers become infertile and affected mares are unable to get in foal because of the high level of circulating cortisone hormones which cause early embryonic abortion.

Most horses with classical Cushing's Disease also develop a distinctly soft and prominent swelling or distention in the normally sunken area (supra-orbital fossa) above the eyebrows.

Causes of Cushing's Disease

For many years, the theory of Cushing's Disease was linked to the development of a tumour or hormone producing cancer tissue in the pituitary gland or slow increase in its size (hypertrophy) at the base of the brain in horses over 18 years of age, especially in pony breeds.

Recent research suggests that there are **two** forms of Cushing's Disease, referred to as **Classical Cushing's Disease**, and the other as **"Metabolic Cushing's Disease"** or "Cushinoid-like Syndrome".

Classical Cushing's

Recent research has now identified the primary cause as **PPID** (short for **Pituitary Pars Intermedia Dysfunction**), resulting from the degeneration of hypothalamic dopaminergic nerve trunks which use dopamine to transmit nervous impulses. These changes are classified as "Classical Cushing's Disease", which develop when circulating ACTH (Adrenocorticotrophic Hormone) and cortisone releasing hormone levels increase in the body. Blood tests can be taken to determine the body's reaction to a dose of dexamethazone, a synthetic corticoid hormone, that can be used to confirm Cushing's Disease. Another new test, developed at the University of California by Dr Johanna Watson, can detect differences in pituitary hormone types to more accurately confirm Cushing's affected horses.

Metabolic Cushing's

Professor Philip Johnson of the University of Missouri has found that many Cushing's horses also develop insulin resistance, similar to Type 2 diabetes in humans. In these horses, the body cells do not respond readily to insulin released after eating starches and non-structural plant sugars. Instead, as glucose increases in the blood, it is converted to fat and stored in the abdominal fat stores. This is now referred to as the **'Metabolic Syndrome'** of Cushing's Disease.

Did You Know that...

Intake of high energy sugars from improved pastures and starch based grains in excess of exercise needs, particularly as a horse ages, can trigger the metabolic syndrome related to "Cushing's" Disease. Under natural grazing, horses store 'carbo' energy as fat during 'good' seasons, and utilise it as a stored energy source during 'lean' periods. However when given high energy, high sugar feeds and pasture grasses all the year around, horses begin to store more fat in their abdominal tissues, which can make them obese, resulting in a rise of circulating cortisol hormone levels. Combined with other hormones, elevations in blood cortisol and the increase in the resistance to insulin, result in the onset of cushinoid-like symptoms.

Characteristics of the “Metabolic Syndrome” are **abnormal fat distribution**, such as a ‘cresty’ neck, **hard and bulging tail- butt and shoulder fat and thickening of the prepuce in geldings or stallions** which are associated with Equine Metabolic Syndrome (EMS) in younger over-weight horses. Horses and ponies with a “hooverer” grazing habit and ferocious appetite at 24/7 access to high quality sugary pastures and hay are at a high risk of developing this form as they age. It is now known that if this perpetual ‘overweight’ condition is maintained by providing starch based feeds, as a horse or pony ages, it may increase the risk of Cushing’s Disease and chronic laminitis (founder).

Managing Cushing’s Disease

There are two methods of managing ‘Cushing’s’ horses, depending on the underlying cause, although strict dietary control is helpful in both forms as the ‘metabolic’ form often develops as horses age.

Managing ‘PPID’ Syndrome

Although there is no permanent cure, once the PPID form of Cushing’s Disease has been confirmed by a Dexamethasone suppression test, then it can be managed by careful medication with drugs which modify dopamine synthesis. Two medications are used – pergolide mesylate and cyproheptadine. Surveys indicate that pergolide is more effective and improves the overall health and returns high cortisone levels to normal ranges in most horses. However, both drugs are expensive and eventually even daily medication will become less effective as the PPID degeneration progresses. PPID affected horses should be fed to reduce the risk of developing a concurrent “metabolic” form in most horses. Most horses respond to an initial therapy with Pergolide within 24-36 hours, with an increase in activity and overall vitality and well being and normal shedding of their long coat. After 7-10 days, depending on the initial severity of the PPID form, the dose rate of Pergolide can be reduced to a maintenance level, which is less expensive during the long therapy period required. Consult your vet for advice.

Handy Hint: Soaking a biscuit of grass hay and clover hay in **double its volume of lukewarm water for 1 hour**, then draining before feeding, to remove soluble sugars and non-structural carbohydrates, is also helpful in limiting the glucose response and fat storage. **Carrots have a lower glycaemic index than apples as a treat!**

Managing the ‘Metabolic’ Syndrome

Where a ‘Cushing’s’ horse does not have a persistent elevation of blood glucose (hyperglycaemia) or insulin resistance, and no history of recurring laminitis, then dietary management and careful attention to hoof care to avoid sole abscesses will help to improve its overall health and lifestyle.

A weight reduction program by increasing exercise and providing more natural roughages and feeds with a low glycaemic index (low GI), which help to maintain more normal blood glucose levels, such as sugar beet pulp (eg Speedi-Beet®), lucerne chaff and hay, low grain long chopped cereal chaff and non-starch fibrous feeds, such as lupin hulls, soyabean hulls and sunflower hulls, as well as cracked lupins, sunflower seeds and copra meal as the dietary source of good quality protein, to replace hard feeds of extruded, starch based processed feeds, grains and even apples, is recommended to maintain proper insulin activity as a horse ages.

Handy Hint: Once more bland, low GI non-fortified feeds are provided by soaking hay, which also removes soluble minerals and vitamins, provide a daily supplement of calcium, trace-minerals and vitamins. **Kohnke’s Own Cell-Provide®** is the most comprehensive supplement to meet these needs in horses on a weight reduction diet, especially when soaked hay is fed which leaches out trace-minerals and salts, as well as meet the micro-nutrient needs of aged horses.

A daily supplement of Kohnke’s Own TRIM™, which contains nutrients which have a role in maintaining normal blood glucose levels and insulin response, as well as help reduce excess body fat, neck ‘crest’ and tail-butt fat when combined with a low GI diet and soaked hay, will help maintain health and vitality in aging horses with metabolic Cushing’s. Full details on its use and dietary control are included on the label of Kohnke’s Own Trim™.

Handy Hint: Molasses has a very high GI!

Instead of using 200mL molasses to dampen the feed and improve acceptance in horses at risk of developing metabolic Cushinoid Syndrome, or feeding a molasses based treat or supplement – use 50-60mL of Energy Gold Omega 3 oil (it’s flavoured with garlic oil to help ensure acceptance), or a similar volume of Apple Cider Vinegar – both low GI foods!

Horses and ponies must have restricted access to improved grass pastures for 1-2 hours per day to limit sugar overload, and this will not only reduce the risk of laminitis (founder) in spring, but also the onset of the metabolic syndrome that can develop into Cushing’s-like Disease. **Refer to Fact Sheets C1 and C2.**

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