

management of Cushing's Syndrome

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PITUITARY pars intermedia dysfunction (PPID), commonly known as Cushing's syndrome, is the most common endocrinological disease in horses and typically affects animals over the age of 15 years.

A progressive disorder seen in all classes of equidae, PPID occurs from alterations in the hypothalamic-pituitary-adrenocortical (HPA) axis and it is postulated that neurodegeneration of the dopaminergic pathways may be the initiating cause of the disease.

Clinical signs of PPID include hirsutism, hyperhidrosis, polydipsia, polyuria, muscle wasting and laminitis.

Affected horses will also develop hypertrophy, hyperplasia or adenoma of the pars intermedia lobe of the pituitary gland, which can often affect surrounding structures and may lead to the over-expression of pro-opiomelanocortin (POMC) a peptide hormone precursor which is

implicated in the production of adrenocorticotrophin hormone (ACTH).

The pituitary gland is comprised of three lobes, the pars distalis (PD), the pars intermedia (PI) and the pars anterior (PA).

The PI contains specialised cells known as melanotrophs, which produce alpha-melanocyte stimulating hormone (alpha-MSH), ACTH and beta endorphin from the pre-cursor POMC.

The PI is subjected to inhibitory control by the hypothalamus, through dopamine production.

Dopamine acts upon melanotroph-based D2 dopamine receptors, inhibiting POMC mRNA expression and subsequent POMC release.

In PPID animals, dopaminergic inhibition of the PI is lost, resulting in lowered dopamine concentrations in affected horses.

With POMC levels unchecked, it is likely that the POMC-hormones are the cause of the clinical signs of PPID in horses.

One complication often associated

with PPID in horses is insulin resistance (IR).

Insulin is responsible for the regulation of blood glucose and initiates the uptake of glucose into the tissues.

Various mechanisms can interfere with normal insulin function, including interference of insulin receptor signalling by high serum concentrations of cortisol or adipokines released from stored adipocytes.

As horses with PPID may often be overweight and may also have adrenocortical hyperplasia, IR will always be a threat.

Recent research has alluded to a link between IR and laminitis meaning that PPID horses are also at increased risk of developing laminitis.

Feeding the horse or pony with Cushing's disease:

Unfortunately laminitis and Cushing's disease go hand in hand and so it is important to treat any horse or pony with Cushing's disease as a laminitic, regardless of whether they have suffered an episode of laminitis.

Forage should form the basis of the diet and hay can be soaked for up to 12 hours to reduce its sugar content.

For horses and ponies that maintain their weight well this is not too much of a problem, generally speaking low starch, low sugar and high fibre chaffs, mixes or pellets designed for laminitics are suitable to use.

However, many horses and ponies with Cushing's disease may still be in work or may have difficulty maintaining their weight and these types can prove much trickier to feed.

It is important to keep the starch and sugar levels of the diet to a minimum but also to provide a source of calories (energy) that either come from fibre or oil, rather than starch found in cereals.

Unmolassed sugar beet and alfalfa are good examples of low starch feed ingredients that contain a good

amount of calories, these ingredients can be added to the diet or there are complete feeds on the market that are free from cereals and molasses and are often based on either alfalfa or unmolassed sugar beet. The advantage of using a complete feed is that you can be safe in the knowledge that the feed is fully balanced with the necessary nutrients, vitamins and minerals required to keep your horse or pony healthy.

For older ponies with teeth that are not quite what they used to be, it's vital to ensure that they still have a good intake of fibre to help maintain their weight and to keep their digestive system healthy and functioning correctly.

The use of soaked high fibre cubes can be beneficial and these can generally be fed in quite large quantities, although it's always a good idea to check with the manufacturer first, to replace part, or the entire hay ration as necessary.

For those horses and ponies still struggling to maintain their weight extra oil can be added to the diet.

Oil is very calorie dense and can be particularly useful for horses that are already receiving large quantities of feed or for those that have limited appetites.

If you are adding oil purely as a source of additional calories then most types of oil are suitable to use including soya, vegetable and linseed oils.

Most horses can be having up to 300ml of oil per day which equates to approximately a coffee mug full, although, as with all changes to the diet it is important to introduce oil gradually.

The addition of a vitamin E supplement is recommended to horses receiving additional large quantities of oil to the diet to help 'mop up' free radicals that are produced during oil metabolism.

A full list of references is available at www.horsehealthmagazine.co.uk.



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