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1.0 Pituitary pars intermedia dysfunction

Equine pituitary pars intermedia dysfunction (PPID) or equine Cushing's disease is caused by an enlargement of the pars intermedia of the pituitary gland, resulting in overproduction of the steroid cortisol and loss of the normal feedback mechanisms that affect cortisol production. The pars intermedia is the central part of the pituitary gland situated at the base of the brain and is involved in the metabolism of cortisol and endorphins (hormones that relieve pain).

Cortisol is released by the adrenal glands in response to a complicated cascade of hormone interactions that begin in the hypothalamus and pituitary gland. Although it is commonly thought that a tumour causes PPID, it is actually an enlargement of the pars intermedia that occurs due to a lack of response to the neurotransmitter dopamine. In normal horses, dopamine and increased blood concentrations of cortisol signal the pars intermedia to reduce cortisol production.

(Waldridge, 2014)

1.1 PPID and Insulin resistance

Insulin resistance is fairly common with PPID. Elevated cortisol antagonizes the actions of insulin, and if insulin resistance is present, then blood concentrations of glucose and insulin will be increased. Common symptoms include frequent 'tying up', sweating and discomfort upon exercise, unusual or inconsistent behavioural symptoms, such as aggression, hyperactivity/hypersensitivity or lethargy, recurrent laminitis, and stiffness or inflammation in the joints (especially the hind legs).

1.2 Diet and Management

It is advised that owners consider the possibility of insulin resistance and keep the pony/horse at a healthy weight to avoid obesity. Insulin resistance management involves a low starch/sugar diet to avoid glycaemic peaks and hyperglycaemia. A diet low in starch and sugar is recommended

This includes the removal or significant decrease of sugary foods such as carrots in the diet, considering soaked hay as forage and monitoring calorie intake. It is prudent to be aware of the fact that weather conditions such as frost or drought can cause very significant changes in the carbohydrate structure of grass in a very short time.

It is reported that frost causes an increase in fructose levels in grass. This can subject laminitic prone horses to relapse, and also affect insulin resistant horses. It may be wise to remove the pony from frosty conditions if possible (for example stabling) or provide alternative forage such as soaked hay. Exercise where possible is also beneficial

2.0 Remedial training for aggression

Horses learn from a release of pressure or removal of aversive stimuli. This works in both positive and negative ways, there is 'good' learning and 'bad' learning. For example, in training, if we wish



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to teach the horse leg yield, one would apply leg pressure and the moment the horse takes a step in the correct direction, the leg pressure is released and the horse learns the desired response from the release of pressure. However, Handlers will often unintentionally reward unwanted behaviours, for example, when a horse will not load into a trailer, the handler will often turn and lead them away to 'start over' and try again. Leading the horse away decreases or removes the aversive stimuli (in this case the trailer). Rather than helping the situation this is actually rewarding the horse's refusal; by not realising that escape from the stimulus is what the horse is seeking the handler is inadvertently helping to reinforce the unwanted behaviour.

This is often the case for aggressive behaviour. The horse displays an aggressive behaviour to the stimulus (the handler) and often the handler will step back to protect themselves. The stepping back removes the pressure and therefore rewards the horse's behaviour. The horse learns that to avoid that particular stimulus (the handler), he must display aggression.

Aggression has been linked to PPID, and even when treatment is given can continue as a learnt behaviour. It is highly advised to seek the help of a professional trainer to implement remedial training.