The diagnostic minefields of PPID and EMS

How to choose the best diagnostic tests for equine pituitary pars intermedia dysfunction and equine metabolic syndrome

Equine pituitary pars intermedia dysfunction (PPID) and equine metabolic syndrome (EMS) are two clinically relevant metabolic diseases seen in the equine population. Both diseases can have profound effects on the health of horses and therefore warrant diagnosis and ongoing treatment. There are numerous tests available for both diseases, making it difficult to know which is the best to undertake and how to advise the owner based on the results.

Overview of the conditions

PPID is a neurodegenerative disease that is progressive due to the loss of dopaminergic input to the pituitary leading to an overproduction of pars intermedia-derived hormones, including adrenocorticotrophic hormone (ACTH). Many other hormones are produced, but ACTH is the most tested and clinically validated.

Clinical signs associated with PPID can include: hypertrichosis, delayed coat shedding, changes in body conformation/regional adiposity, laminitis and PU/PD, among many others.

PPID testing

Basal ACTH concentration in plasma is the most easily accessible test available, but is not without its drawbacks. The cut-off values have been debated; there are various viewpoints as to where the exact cut-off should be.

At Liphook Equine Hospital, we have a reference range that changes weekly based on over 30,000 samples that have been run through our lab thanks to the Talk About Laminitis scheme. This allows us to very accurately guide clinicians on the appropriate treatment course and clinical relevance of each result. It should be noted that treatment with pergolide should always be based on the presence of clinical signs and age as well as the exact value on the test.

If the basal ACTH result is borderline or within a grey area proposed by the Equine Endocrinology Group (30 to 50 pg/ml in the non-autumn months and 50 to 100pg/ml in the autumn period), further testing with a thyrotropin-releasing hormone (TRH) stimulation test should be undertaken.

Although reference ranges are available for the autumn period, there is some question as to their sensitivity and specificity. As such, it may be more appropriate to run a basal ACTH during the autumn period due to its high sensitivity and specificity. The TRH stimulation test is affected by feeding, so horses should not be given supplementary food for approximately four hours prior to the test.

Repeat testing, whether it is a basal ACTH or a TRH stimulation, is essential once pergolide treatment has been initiated. Most horses will have responded maximally within one month following initiation of pergolide, but a few outliers can take longer. If repeat samples are taken early and the results do not reflect complete endocrinological control, the test can be repeated one to two months later to ensure that there are no ongoing reductions in ACTH at the dose.

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