

Recognizing and Treating Equine Cushing's Disease and Metabolic Disorder

Signs and Symptoms

While Equine Cushing's Disease (Pituitary Pars Intermedia Dysfunction or PPID) and Equine Metabolic Syndrome (EMS) are distinctly separate conditions, the often overlapping signs and symptoms require careful diagnosis.

EQUINE CUSHING'S DISEASE (PPID)

PPID refers to a condition characterized by excess production of the hormone cortisol as a result of a tumor in the pituitary gland of the brain, which produces high levels of the hormone ACTH. The ACTH causes high cortisol release from the adrenals.

Although a late, distinctive clinical sign of PPID is a long hair coat that does not shed out – the first symptom is often unexplained Fall laminitis.

Other signs may include:

- Enlarged mammary glands
- Milk production in unbred mares
- Increased thirst/urination
- Loss of condition and muscle wasting
- Tendon/ligament breakdown

EQUINE METABOLIC SYNDROME (EMS)

EMS is a loss of sensitivity to insulin at the cellular level. It may be an inherent genetic tendency, or induced by the high cortisol in PPID and other diseases.

Typical signs and symptoms of EMS include:

- Easy weight gain
- Abnormal fat deposits such as a cresty neck, or lumpy fat patches that persist even if the horse loses weight; fatty sheath
- Puffiness in the hollows above the eyes
- History of laminitis
- Advanced symptoms include increased thirst and urination, loss of body condition, muscle wasting, and low-energy levels

Diagnosis

Because PPID and EMS are treated differently, the correct diagnosis is critical.

DIAGNOSING PPID

Endogenous ACTH Test – a single blood draw to measure the level of endogenous adrenocorticotrophic hormone is diagnostic for PPID. **(1)**

Thyroid-Releasing (TRH) Stimulation Test – more false positives. Due to higher sensitivity it is a good test for horses strongly suspected to be early PPID who tested negative by ACTH. Results are not reliable during the Fall Seasonal Rise.

Cortisol Rhythm Test – not diagnostic for PPID.

DIAGNOSING EMS

EMS is diagnosed by obtaining non-fasting glucose and insulin from the same blood draw.

A GI ratio of less than 4.5 is considered positive for EMS. A GI ratio between 4.5 and 10 indicates compensated EMS. MIRC and RISQI proxies are also used for diagnosis. **(2)**



Nov 2005 - Before diet change.



Apr 2006 - After diet change.

Diagnosis: EMS

REFERENCES

- (1) Cornell University Animal Health Diagnostic Laboratory, Equine Cushing's test.
- (2) AJVR, Vol 66, No 12, 2005.
- (3) Laminitis Trust Clinical Trial I.
- (4) Comp of Continuing Education for the Practicing Veterinarian, Vol 26(2), Febr 2004.
- (5) Open Veterinary Journal, (2022), Vol. 12(4): 511-518

Treatment

PPID tends to develop as equines age. The first sign is usually unexplained Fall laminitis. Younger horses are more likely to have only EMS, while older horses may develop and require treatment for both PPID and EMS.

TREATING PPID

PPID is controlled by the medication **Pergolide**, available only by veterinary prescription. Cabergoline is an alternative treatment.

Follow up testing for ACTH levels is recommended to determine if the dose is adequate or excessive. Some equines may need a higher dose during the Autumn and Winter months, but are able to return to their normal maintenance dose in spring.

The herb **Chaste Tree Berry** (available in several forms) may control symptoms for some horses, especially if there is an element of excessive prolactin production. It does not control the disease. **(3)**

TREATING EMS

The primary treatment for equines with EMS only, and for equines with both PPID and EMS, is a tightly carbohydrate-controlled and mineral-balanced diet.

Grain products and pasture turnout should be eliminated until insulin is controlled and reintroduced with extreme caution. Forage products with tested hydrolyzable carbohydrates (**HC = ESC plus starch**) less than 10%, or soaked and drained to remove soluble sugar, should be fed as recommended in the 2007 Nutrient Requirements for Horses, along with adequate salt and balanced mineral supplements. **(4)** Attempting to achieve weight loss by reducing intake below 1.5% of body weight can worsen EMS and precipitate hypertriglyceridemia.

Whenever possible, diet control should be accompanied by daily exercise. Horses that do not respond to diet and exercise alone can be tried on metformin, 30 mg/kg twice daily but some horses fail to respond and in others the drug loses effectiveness over time. In those horses with refractory hyperinsulinemia, SGLT2 inhibitors like canagliflozin and ertugliflozin can be used. **(5)**



Equine Cushing's Disease and Metabolic Disorder

RECOVERY IS WITHIN REACH

Correct diagnosis, appropriate medication, diet, hoof care, and exercise are critical. Horses and other equines with PPID and EMS can become and remain sound, healthy, and happy.

The Mission of the ECIR Group Inc. is to improve the welfare of equines with metabolic disorders via a unique interface between basic research and real-life clinical experience.

Prevention of laminitis is the ultimate goal.

The ECIR Group serves the scientific community, practicing clinicians, and owners by focusing on investigations most likely to quickly, immediately, and significantly benefit the welfare of the horse.



Jack before diagnosis and treatment.



Jack after Cushing's diagnosis and treatment.

The ECIR Group, led by Eleanor M. Kellon, VMD, combines over two decades of experience from over 9,000 international members and provides research and support to continue the battle against the devastating and debilitating effects of PPID and EMS.

Through the devotion of countless horse owners and the dedication of their veterinarians and hoof care professionals, thousands of equines have regained their health and escaped euthanasia.

"Hope is never gone until you choose to abandon it"
— Eleanor M. Kellon, VMD



Photo by Regine Kraft

Amber at 29. PPID, EMS.

A Basic Guide to Recognizing and Treating Cushing's Disease and Metabolic Disorder



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