

Equine Cushing's Disease

Wendy Krebs, DVM
Bend Equine Medical Center



Equine Cushing's Disease is a commonly diagnosed medical condition of older horses. Affected horses are usually in their late teens or older, but it has been diagnosed in horses as young as 7 years old. It has some similarities to the disease with the same name in dogs and in humans, but also differs in significant ways. Affected horses can show a variety of signs, including chronic laminitis (founder), a long and/or curly hair coat that may fail to shed in the spring, a pot-belly appearance, bulging above the eyes, lethargy, increased drinking and urination, weight loss or weight gain, cresty necks, muscle wasting and they may have decreased immune function which leads to chronic infections. Elevated liver enzymes may also be apparent. Laminitis induced by Cushing's Disease can be life-threatening.

Equine Cushing's Disease (ECD) results from a dysfunction of the pituitary gland in the brain. Essentially, the pituitary gland enlarges to an abnormal size and results in secondary excessive secretion of adrenal hormones. These various hormones are responsible for the clinical signs associated with the disease. While the pituitary gland enlargement is non-cancerous, it can enlarge to the point of creating dysfunction in the brain via compression. This may rarely lead to blindness, for example, if the enlarged pituitary compresses the optic nerves.

Testing for ECD can be problematic. While several tests exist, none are truly considered the "gold standard", or 100% reliable. The three most reliable tests are the dexamethasone suppression test, the ACTH test, and a combined dexamethasone-TRH test. The dexamethasone suppression test is performed by drawing a baseline blood sample for cortisol, then administering

dexamethasone intramuscularly. In response to the dexamethasone, the horse's pituitary should decrease the amount of adrenal hormones (cortisol) it causes the body to produce. A second blood sample is drawn from 8-12 hours following the dexamethasone injection. In a normal horse, the cortisol should be decreased in the second sample, but in a horse with Cushing's disease, the pituitary continues to send signals to produce more cortisol rather than decreasing the production. Therefore, the horse does not "suppress" production of cortisol as they normally should. The drawback to this test is that very, very rarely it can cause the onset of laminitis. It is therefore avoided in some cases if the horse is already showing signs of laminitis. A combined dexamethasone-TRH test is similar, but thyrotropin releasing hormone (TRH) is also administered and this makes the test slightly more sensitive. TRH can be difficult and expensive to obtain, however.

An ACTH test is slightly less reliable than a dexamethasone suppression test, but has no associated risk of laminitis. It requires only one sample of blood, which must be quickly processed and frozen and sent to the laboratory. Any delay in processing or errors in processing can make the test unreliable. The test quantifies the amount of ACTH in the blood; ACTH is a precursor to cortisol. Horses with significantly elevated ACTH values are likely affected with Cushing's Disease.

Horses suspected of having Cushing's Disease may also be tested for blood insulin levels. Insulin-resistance is a common side effect of Cushing's Disease, and results in a decreased ability to deal with sugars in the diet. It is similar in some ways to Type II Diabetes in humans. If a horse is diagnosed as being insulin-resistant, it is important to limit the amount of sugars it consumes in grain, hay, carrots, etc. This can help control signs of laminitis. Insulin resistance also occurs in horses with Metabolic Syndrome, so this type of dietary manipulation is important in both diseases. Horses can be affected with both diseases simultaneously.

There is no cure for Cushing's Disease, but its symptoms can be alleviated in most cases by daily treatment with medications called dopamine agonists that block the release of the excessive adrenal hormones and cortisol. Treatment is life long. Pergolide and cyproheptadine are the most commonly used medications. Pergolide is typically most effective. Treatment for a full-sized horse usually costs between \$80-\$100 per month. Cyproheptadine is less effective, but is also less expensive, at about \$35 per month. Both medications are administered orally on a daily or twice daily basis and come in liquid or tablet form. Sometimes both medications are used simultaneously in cases that don't respond to either treatment alone. Chasteberry, a herbal extract of the *Vitex agnus* plant, has been effective anecdotally in helping to control Cushing's Disease in some horses, but is typically not a mainstay of therapy.

Horses diagnosed with Cushing's Disease may need special care in other ways as well. Those affected with a long haircoat may need to be clipped to prevent overheating. Horses with laminitis should have frequent trims and footcare to prevent exacerbation of laminitis or accompanying hoof abscesses. They may need to have extra water available since the disease causes increased volumes of urination. Owners should monitor horses vigilantly for any early signs of infection elsewhere in the body as well, since the immune system is compromised. Early treatment with antibiotics may be necessary. And, although Cushing's has no effect on teeth directly, older

horses usually need to have their teeth floated every 6-12 months to help optimize digestion of their feed and to improve oral comfort.