

Equine Cushing's Disease

Cushing's is a hormonal disease of horses often caused by a pituitary gland tumor

Overview

In 1932 Harvey Cushing first described what is now known as Cushing's disease in humans.¹ The disease has since been discovered in a number of species, including horses. Equine Cushing's disease is a hormonal (endocrine) disorder that is most often caused by a tumor in the pituitary gland.^{2,3}

The pituitary gland is a pea-sized structure located near the base of the brain that controls basically all body systems by the hormones it secretes. This is why the pituitary gland is often called the "master" gland. There are three lobes to the equine pituitary gland: Anterior, posterior, and intermediate. In horses with equine Cushing's disease, the intermediate lobe, also called the pars intermedia, becomes enlarged and produces large amounts of a variety of hormones such as ACTH (adrenocorticotropic hormone), alpha-melanocyte stimulating hormone (alpha-MSH), corticotropin-like intermediate peptide (CLIP), and beta-endorphin. Abnormally high levels of these hormones have a wide range of negative effects on a horse's body. One of the most striking changes is the increased production of the stress hormone cortisol, which is made by the adrenal glands. Persistent high levels of cortisol and other hormones have deleterious effects on numerous body systems.⁴ For example, these compounds increase blood sugar (glucose) levels and suppress the immune system.

Cushing's is one of the most commonly diagnosed endocrine disorders of horses, affecting approximately 0.1% to 0.5% of all horses.⁴ It is most frequently diagnosed in older horses (the average age of affected horses is about 19 years), but it can occur in young horses as well, with the youngest horse being diagnosed at seven years of age. Ponies appear to be more frequently affected than horses, but there does not appear to be a breed or sex predilection.^{2,3}



One of the most obvious signs of equine Cushing's disease is an abnormal haircoat.

Clinical Signs

One of the most easily recognizable signs of equine Cushing's disease is an abnormal haircoat. This can be as mild as subtle changes in shedding pattern or as obvious as a long, wavy, overgrown coat (called hirsutism). Other classic signs of Cushing's include:

- Excessive sweating;
- Increased appetite;
- Increased drinking and urination;
- Lethargy and poor performance;
- A pot-bellied appearance;
- Muscle loss (especially along the topline);
- Abnormal fat distribution (primarily in the crest of the neck, tail head, sheath, and above the eyes);
- Chronic or relapsing laminitis; and
- Delayed wound healing, skin infections, and increased susceptibility to internal parasites.⁴

Diagnosis

Equine Cushing's disease can have a long, slow onset, which makes diagnosis

difficult. In addition, none of the available tests for the disease are perfect. Stage of disease, season,⁵ and other factors can all impact testing and potentially result in false negative or false positive results. If cost is a concern, horses can be diagnosed based on clinical presentation alone; however, this is not recommended in most cases. Instead, the use of one or more of the available diagnostic tests is advised to more definitively diagnose equine Cushing's.

Resting (basal) ACTH and insulin level measurements, the low-dose dexamethasone suppression test (DST), and the thyrotropin releasing hormone (TRH) response test are the most common tests to diagnose equine Cushing's disease. Because insulin levels can be extremely variable, experts indicate the best tests currently available are ACTH level measurements or the DST.⁵ ACTH levels are generally elevated in horses with equine Cushing's. Measuring these levels only requires taking a single blood sample; however, improper sample handling, stress, pain, and season can all affect the test results.

The DST involves administering a small, single intramuscular injection of dexamethasone (a steroid hormone that is similar to cortisol). In normal horses this injection will decrease or "suppress" the production of cortisol. Horses that have Cushing's disease do not respond to the dexamethasone injection, so the cortisol levels are not suppressed. Instead, the cortisol levels remain elevated throughout the testing period (i.e., 19 to 24 hours after injection).

Unfortunately, the DST is not as easy as the ACTH test. The DST requires the veterinarian to make two trips to the farm in two days. The veterinarian injects the horse with the dexamethasone in the evening and then returns to the farm the next day to take the blood sample to measure the horse's cortisol level and response to the injection.

Other tests are available, including

measuring resting glucose and insulin levels, the ACTH stimulation test, a urine cortisol to creatinine ratio test, the dexamethasone-suppression test, or any combination of the above tests. Discuss these options with your veterinarian to choose the most appropriate test(s) for your horse. More than one test might be needed to properly diagnose Cushing's disease in your horse.

Treatment

There is no cure for Cushing's disease. Veterinarians currently recommend treating affected horses with pergolide mesylate, which decreases circulating ACTH (and other hormone) levels.^{4,6} Pergolide mesylate is only available for horses as a specially formulated product. Caution is recommended when administering this product, and owners are encouraged to discuss the appropriate use of pergolide mesylate with their veterinarians.⁷ Because high doses of pergolide mesylate can cause anorexia or depression, retesting horses to find the best dose is advocated.⁶ While trilostane (an inhibitor of steroid synthesis) or cyproheptadine (a serotonin blocker) can be prescribed and have been advocated

for equine Cushing's disease, experts do not currently recommend these drugs.^{4,6}

Supportive care and routine veterinary examinations also play an important role in managing equine Cushing's disease. For example, clip excessive hair; examine the horse for wounds or infections; ensure prompt and thorough treatment of all infections (this can require prolonged use of antibiotics); schedule routine farrier and dental appointments; and perform routine vaccination and frequent deworming⁸ to maximize your horse's health and comfort.

Diet should also be considered. Try to decrease the amount of grains or other concentrates, maintain a healthy body condition, and ensure the horse's diet is properly balanced. There are also dietary supplements available that are advocated for horses with metabolic diseases such as Cushing's or insulin resistance. Choose nutritional supplements wisely and consider all the nutrients in the horse's diet.

Prognosis

Despite being incurable, horses with Cushing's disease can live comfortably if they are managed appropriately. In fact,

well-managed horses are anticipated to live five to seven years and longer. In severely affected horses, however, laminitis and recurrent infections are expensive to treat and can shorten the horse's lifespan dramatically. In rare cases the pituitary gland can become so enlarged that blindness and seizures can occur. 🐾

KEY REFERENCES

1. Eustace, R. Cushings. www.laminitis.org/cushings.html
2. Zimmel, D, McFarlane, D. Equine Cushing's Disease: Equine Pituitary Pars Intermedia Dysfunction. www.aaep.org/health_articles_view.php?id=340
3. Christie, K. Equine Cushing's Disease. [www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/hrs10688/\\$FILE/equine_cushings_disease.pdf](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/hrs10688/$FILE/equine_cushings_disease.pdf)
4. Oke, S. Cushing's or Metabolic Syndrome? *The Horse*, March 2010
5. Oke, S. Remember seasonal variation in Cushing's testing. www.TheHorse.com/15139
6. Frank, N. Table Topic: Cushing's or Metabolic Syndrome? www.TheHorse.com/13983
7. Oke, S. Stability and Efficacy of Compounded Pergolide Examined. www.TheHorse.com/13641
8. Oke, S. Targeted deworming advocated for Cushing's horses. www.TheHorse.com/15835

Further reading and free horse health e-newsletter: www.TheHorse.com/Cushings

Authored by: Stacey Oke, DVM, MSc;
reviewed by: Jill Beech, VMD, Dipl. ACVIM.



before



after



THE Natural ALTERNATIVE

Evitex is the unique form of Vitex agnus castus in the clinical trial conducted over three years by the Laminitis Trust. Evitex may help with normal shedding, drinking, behavior, muscle tone and weight, fatty deposits and cresty neck.

Thank you Emerald Valley, you gave me my pony back.

We have been the proud owner of Little Mack for over a year. We had watched this small 20-year-old Spotted Saddlehorse founder year after year. When his previous owners decided to place him with us, our first job was to get the vet out to diagnose his problem.

We immediately started him on medication and had the farrier out for some extreme work on his hooves. We noticed some improvement, however with summer heat upon us, Little Mack continued to drink mass amounts of water and grow a winter coat.

This spring our neighbor noticed us once again, shaving 3-inch hair off our best friend. She brought up an article from a national magazine. After reading, I decided to speak with Emerald Valley, and had our first 2 litres of Evitex delivered. Within 3 weeks, Little Mack had shed down fully to his beautiful black and white coat, his eyes seemed brighter, water intake adjusted to a normal level and amazingly each night he would come to us with a nicker at a running walk vs. a lazy lumber.

Today, Little Mack is back to ruling two Quarter Horse mares with all the spunk of a 10-year-old. He's my 11-year-old daughter's passion and we look forward to many more years of trail riding and showing him off in our local parades. Thank you for helping get our best friend back on his hooves!

Kelly H., Georgia

PLEASE VISIT WWW.EMERALDVALLEYEQUINE.COM OR CALL TOLL FREE 888.638.8262