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YOUR GUIDE TO EQUINE HEALTH CARE

Equine Cushing's

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

Overview

Equine Cushing's disease, equine Cushing's syndrome, hyperadrenocorticism, pars intermedia pituitary adenoma (PIPA), and pituitary pars intermedia dysfunction (PPID) are all terms used to describe horses with an endocrine (hormonal) disorder. This disorder involves production of very high levels of cortisol and cortisol-like hormones, which are steroids that are known as a "stress hormones." They have wide-reaching effects throughout the body such as increasing blood sugar (glucose) levels and suppressing the immune system.

Equine Cushing's is most often caused by a benign tumor (an adenoma) or benign hyperplasia or hypertrophy (increase size and number of cells) in the region of the pituitary gland referred to as the pars intermedia. This tumor or increase in cells results in the increased production and release of a variety of hormones from the pituitary gland, including ACTH (adrenocorticotropin hormone), melanocyte stimulating hormone (MSH), cortitropin-like intermediate peptide (CLIP), and beta-Endorphin. The high levels of ACTH and these other hormones result in, among other things, an increased production of cortisol by the adrenal glands, which are located near the kidneys. The other compounds have cortisol activitiy and can mimic cortisol effect without producing a high level of cortisol in the blood. Many of the clinical signs associated with equine Cushing's disease can be explained by these high circulating levels of cortisol or cortisol-like compounds.

Cushing's is one of the most commonly diagnosed endocrine disorders of horses. It is most commonly observed in older horses (the average age of affected horses is 19 years of age), but the disease can occur in young horses as well, with the youngest horse being diagnosed at 7 years of age. Ponies appear to be more frequently affected affected than horses, and there does not appear to be a breed or sex predilection.

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Clinical Signs

By far the most common manifestation of Cushing's is an abnormal haircoat. This can be as mild as subtle changes in shedding pattern to the full-blown development of a long, wavy, overgrown coat. Other common clinical signs include an increase in appetite, drinking, and urination, plus lethargy, a pot-bellied appearance, muscle loss, a chronic or relapsing laminitis, delayed wound healing, skin infections, recurrent respiratory disease, dental disease, and an increased susceptibility to internal parasites.

Diagnosis

Where cost is a concern, some horses continue to be diagnosed based on clinical presentation alone; however, a number of diagnostic tests can assist in achieving a more definitive diagnosis and are recommended in horses with subtle clinical signs.

The most common tests used to diagnose Cushing's in horses are resting (basal) ACTH and insulin levels, the low dose dexamethasone suppression test (DST), and the thyrotropin releasing hormone (TRH) response test.

First, the ACTH and insulin levels are generally elevated in horses with equine Cushing's. Nonetheless, there are a variety of other reasons that can explain increased levels of insulin or ACTH (e.g., severe illness and large grain meals, respectively).

Next, the low dose dexamethasone suppression test involves injecting a small amount of dexamethasone (a steroid hormone-like cortisol) intramuscularly. In normal horses, exogenous administration of a steroid will suppress cortisol levels. In contrast, horses with Cushing's are unable to respond appropriately to the dexamethasone, so the cortisol levels are not suppressed, but remain elevated 19 to 24 hours after injection.

Finally, let's discuss the TRH test. The ACTH-producing cells in the pars Intermedia of the pituitary gland of horses with equine Cushing's are abnormally sensitive to TRH, and if exogenous TRH is administered (e.g., intravenously), then affected horses generally show an increase in circulating ACTH levels.

Other tests that can be used, including resting glucose levels, an ACTH stimulation test, a urine cortisol to creatinine ratio test, or any combination of the above tests.

Treatment

There is no cure for Cushing's disease.

Treatment is aimed at controlling the production of ACTH and other compounds released from the par intermedia, thus lessening the severity of clinical signs. The treatment of choice for Cushing's is pergolide mesylate, which functions by decreasing circulating ACTH and other hormone levels. At high doses, however, anorexia and depression can occur. Alternatively, trilostane (an inhibitor of steroid synthesis) or cyproheptadine (a serotonin blocker) can be prescribed.

In addition to drug therapy, supportive care and routine veterinary examinations play an important role in the management of affected horses. For example, clipping excessive hair, examining the horse for wounds or infections, ensuring prompt and through treatment of all infections (this can require prolonged use of antibiotics), scheduling routine farrier and dental appointments, routine vaccination, and frequent deworming are all important for maximizing the horse's health and comfort.

Diet is also an important component of the management of a equine Cushing's patient. Decreasing the amount of carbohydrates fed (e.g., grains or other concentrates), maintaining a healthy body condition, and ensuring the horse's diet is properly balanced are essential, especially considering that some horses with equine Cushing's are insulin resistant. That is, the cells in the horse's body become resistant to the effects of insulin and high blood glucose levels develop. A modified diet will help prevent laminitis.

Prognosis

The prognosis for Cushing's is highly variable and depends largely on the observed clinical signs, progression of disease, and willingness of the owner to properly manage the affected horse. Well-managed horses are anticipated to live approximately five to seven years. In severely affected horses, however, laminitis and recurrent infections are timely and expensive to manage and can shorten the anticipated life expectancy dramatically. Further, if the pituitary tumor becomes large enough, blindness and seizures can occur.

Prevention

At present, there is no evidence that Cushing's disease can be prevented.

FAST FACTS

- Cushing's is a hormonal disease of horses most often caused by a benign tumor of the pituitary gland that results in the production of very high levels cortisol and cortisol-like hormones.
- High levels of cortisol and cortisol-like hormones are responsible for the preponderance of the clinical signs observed in equine Cushing's patients, including a long, wavy coat, sway-back appearance, muscle loss, an increase in drinking, eating, and urination, recurrent respiratory disease, and chronic or recurrent laminitis.
- A variety of tests are available to assist in achieving a definitive diagnosis, especially in horses with subtle clinical signs.
- There is no cure for Cushing's. Drug therapy and husbandry play an important role in the management of affected horses to help them live as long and as comfortable lives as possible.