



Equine Pituitary Pars Intermedia Dysfunction/Cushings Disease

Many aging horses, especially ponies, develop equine Cushing's disease (also known as PPID or Pituitary pars intermedia dysfunction). Even though the disease is most common in older horses in their late teens and beyond, it has been reported in horses as young as seven years of age. The classic body changes that suggest Cushing's disease include an excessively long, curly hair coat that does not shed out in the summer (hirsutism), excessive sweating (hyperhidrosis), pot belly (abdominal muscle wasting), topline muscle wasting, increased thirst/urination (polydipsia/polyuria), recurrent hoof abscesses, recurrent founder (laminitis), lethargy, recurrent infections, infertility, or lack of estrus cycles, and/or abnormal mammary gland development. In a normal equine pituitary gland, a specific cell type (melanotrope) receives neuronal input from the hypothalamus. These neurons release dopamine. Dopamine then inhibits part of the pituitary gland from making and releasing many different hormones. In the diseased gland, this nerve degeneration occurs causing loss of dopamine input. As a result, the pituitary gland's intermediate lobe enlarges. The cells are hyperactive or present in high numbers and lead to production of abnormally high levels of many pituitary hormones. This list includes adrenocorticotropic hormone (ACTH), melanocyte stimulating hormone (α-MSH), β-endorphin, and other products of a large precursor hormone, called Pro-Opiomelanocortin, or POMC. While not all of the effects of these hormones are known, some like ACTH are better understood.

Specifically, ACTH overstimulates a horse's cortisol synthesis by the adrenal glands. Immune system depression secondary to the excessive steroid release predisposes your horse to recurrent bacterial, viral and/or parasitic infections of the lungs, sinuses, teeth, intestines, and hooves. Dental exams and floating should be performed at least yearly to assure infected teeth are treated early before they can progress to sinus problems. Affected horses should have parasite analysis every 2 months, since they are more prone to intestinal parasites. Regular hoof trimming or shoeing is also very important, and should be done every 6 to 8 weeks to help recognize founder earlier as well as hoof abscesses.

The internal organs also suffer the brunt of excess cortisol. The kidneys are presented with too much sugar, which causes them to lose excessive amounts of water. Additionally, the pituitary imbalance blocks the release of a hormone (ADH) that normally allows the kidneys to preserve water. The end result is excessive water consumption and loss. These horses always need access to plenty of fresh water to insure adequate hydration. The steroid excess can damage the liver's metabolic capacity as well. The liver is an extremely important processing organ in the body that is key in metabolizing toxins and nutrients. It may also be necessary to clip the long curly coat in the summer and to provide good quality low carbohydrate feeds.

Many of the above aggressive management procedures can alleviate or eliminate a lot of equine Cushing's related problems. However, some complications, especially founder and recurrent infections, require life-long medications to control. Founder, if not controlled by medications (the steroid suppressing drugs listed below and analgesics/anti-inflammatories) and proper hoof support, can be fatal in these horses. There is no cure for Cushing's disease, only means of controlling the disease. The main medication used for Cushing's disease is Pergolide (brand name Prascend). Pergolide is a dopamine agonist that blocks POMC and hence steroid production. In most cases, it is very effective at treating the symptoms of Cushing's Disease and allowing the affected horse to return to a normal life.

The bottom line is Cushing's disease is becoming more common with the increasing aging equine population. Some cases just need judicious basic management while others require life-long medications. Regardless, many of these horses can go on to have a good quality of life with appropriate treatment.

In regards to feeding, horses with PPID can need specialized feeding regimens. Glycemic index signifies the degree to which a certain food raises blood sugar and insulin levels in the body. Molasses-based diets, such as sweet and certain senior feeds, oats, and barley have high glycemic indexes. Low glycemic index feeds include Bermuda grass hay, rice bran, and beet pulp. Other hays, such as timothy and alfalfa, have moderate glycemic indexes. An important recommendation is to feed grass hay or other feed sources which are low in water-soluble carbohydrates (WSC) or non-structural carbohydrates (NSC). Forage analysis of your hay is strongly encouraged to accurately determine the WSC/NSC content of one's hay. NSC content below 12% is suggested for IR horses and ponies, in both EMS (Equine metabolic syndrome) and PPID (aka Cushing's) patients. Also, if more calories are needed, fat sources, such as Envision grain is better than grains and feeds with high molasses content. Higher fiber content in the daily diet is also encouraged. This can be found in beet pulp and many commercially produced pelleted feeds- please ensure beet pulp is soaked properly. Please let me know if you have any questions about feed choices or about disease management