

# Cushing's Disease / Syndrome – PPID & EMS: What Horse Owners Should Know

Horse owners are often unaware of problems that affect their horse's health in less obvious ways. Endocrine diseases are classic examples. The endocrine system is the hormonal, regulatory system of the body. Endocrine glands are tiny organs that secrete hormones and substances into the bloodstream as necessary to maintain control of body systems.

There continues to be great confusion in the horse world surrounding endocrine diseases. If anything, this has been made worse by the recent recognition and re-naming of some of the syndromes. Disease names are used frequently but often incorrectly in the equine world. This article explains the basic concepts of endocrine (hormonal) function and disease, and discusses the two most common endocrine diseases in horses:

- *Equine Cushing's Disease/Syndrome – Also known as Pituitary Pars Intermedia Dysfunction- or PPID*
- *Peripheral Cushing's Disease/Syndrome – Also known as Equine Metabolic Syndrome – or EMS*

## PITUITARY PARS INTERMEDIA DYSFUNCTION – PPID

It is important for horse owners to understand that the equine body's regulatory systems are complex. To understand PPID, you first have to understand the concept of how the endocrine system works. This system is based on glands communicating with other glands, which then communicate with organs, all through signals (hormones) sent through the bloodstream. The system of pituitary-adrenal gland communication is just one example of how this works. Abnormal function of this system is responsible for PPID.

In a normal horse, there is intricate communication between the pituitary gland, located at the base of the brain, and a neighboring part of the brain, the hypothalamus. The hypothalamus reads conditions in the blood, and based on this, sends a chemical signal to the pituitary gland to release precise amounts of certain substances into the bloodstream. The levels of these substances in the blood then have direct effects on the adrenal gland located near the kidney, causing it to release cortisol, a steroid hormone very involved in most aspects of normal body function, into the bloodstream. Cortisol then affects organs and body systems in its many vital ways.

It is an overgrowth of part of the pituitary gland that causes PPID. The cause of this overgrowth is still not entirely clear. This overgrown gland also is overactive in secreting hormones. The excessive hormone levels in the blood then cause the adrenal gland to over-produce cortisol. Cortisol and other overproduced adrenal hormones then cause the effects on hair coat, feet, musculature and other body changes that we see as the classic signs of PPID.

The most important sign of PPID is laminitis. How cortisol and other products of the overactive adrenal gland cause laminitis is still not entirely understood. PPID is the reason many old ponies have chronic laminitis and badly misshapen hooves. When an old horse suddenly has a bout of laminitis for no apparent reason, one of the first things I consider is PPID. Laminitis, as we have discussed in previous articles, is a life threatening degeneration of the attachments of the hoof wall to the underlying tissues. Perhaps the most important reason to recognize and understand PPID is to control the problem before it results in laminitis.

Horses with PPID often have changes in the appearance of the hair coat. The classic change is a long, curly coat that is often retained through the summer. Sometimes the only area where coat is retained is on the legs or in patches on the

body. Other signs of PPID are recurrent infections (sole abscess, respiratory infection, skin infections), excessive urination and drinking, muscle wasting over the top-line, and a pot-bellied appearance. Many horses affected by this problem are lethargic but usually maintain a good appetite. Mares with this and other hormonal disease may be difficult to breed. The disease is found in all breeds but is more common in the pony breeds and Morgan horses. Diagnosis of PPID is based on a veterinary examination, history, and several specific blood tests for hormone levels.

PPID is a very significant and common disease of old horses, and every horse owner should be aware of its signs. In the past 10 years, better treatment and management methods have been developed. The key is awareness and recognition. Treatment involves changes in management, special attention to good basic care, and the use of specific medications that control the production of hormones. This approach is practical, affordable and is usually very effective, allowing horses to lead relatively normal lives. Failure to recognize the problem leads to other problems like laminitis and recurrent infection, which ultimately can lead to death.

#### EQUINE METABOLIC SYNDROME – EMS

Our understanding of diseases of the endocrine system has increased greatly. For example, when I started equine veterinary practice in 1993, a certain type of overweight horse was thought to be hypothyroid (have a low thyroid hormone level). This classic, so-called “hypothyroid” horse has lots of fat over the top-line and around the tail-head, and has a thick, cresty neck. Horses fitting this description are common and are sometimes just referred to as “easy keepers.” A minimal amount of feed keeps these horses fat. These horses have a high incidence of laminitis. In the past, veterinarians treated many of these horses with thyroid hormone supplements, reduced feed, and exercise, and many did improve.

The syndrome is now referred to as Equine Metabolic Syndrome, and we have learned that these horses are usually not hypothyroid. As happens in overweight people, the excess fat causes a cycle of more health problems by causing the body to be resistant to the effects of insulin. This leads to high blood sugar and fat, and most importantly for the horse, can lead to laminitis. Laminitis in these horses is usually low-grade and chronic, and can sometimes be very resistant to treatment. Diagnosis of EMS is fairly simple and cost effective, and is primarily by history, examination, and the measurement of blood insulin levels.

Treatment involves decreasing feed intake (especially grain) and increasing exercise levels. Certain feed supplements and drugs aimed at improving the function of insulin are sometimes used, but are currently not proven to be effective. Once again, the key point is to recognize that this syndrome exists, that it can be diagnosed relatively easily, and most importantly, that it can be treated simply.

## CONCLUSION

As a horse owner, it is important to be aware of the common endocrine diseases PPID and EMS, and understand that they usually manifest in subtle ways. Changes in a horse's appearance that are caused by these diseases are often missed, and mistaken for normal. By being on the lookout for the signs of these diseases, there is an opportunity for diagnosis and treatment, and in so doing, an opportunity to improve the quality of life for your horse. If your horses are showing even subtle signs of either of these diseases, contact your veterinarian promptly for the best diagnosis and treatment options.

By Douglas O. Thal DVM Dipl. ABVPBoard Certified in Equine PracticeThal Equine LLCLast Updated August 2011