

Equine Cushing's Disease or PPID

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What is PPID?

Pituitary pars intermedia dysfunction (PPID) is one of the most common endocrine diseases in horses, generally affecting those over the age of 15 years. It is also frequently referred to as Equine Cushing's Disease. PPID is caused by degenerative changes in an area of the brain known as the pituitary gland, hence the name of the disease. This gland is located at the base of the brain. In horses with PPID, the specific section of the pituitary gland that is most affected is called the pars intermedia; changes occur within this gland that result in increased production of a hormone called adrenocorticotropic hormone (ACTH).

What does a horse with PPID look like?

The most obvious sign of PPID is a distinct, shaggy hair coat, called hypertrichosis (Figure 1). Some horses can develop this long hair coat over their entire body, while others have localized patches of long hair, or just some longer hairs around the jawlines and lower limbs. These horses also can have delayed shedding in the spring or will not shed out at all. Other common, but less obvious, signs of PPID include increased thirst (polydipsia), increased urination (polyuria), and muscle wasting. These horses can also have difficulty with managing their body temperature, especially during hot, humid conditions, due to the abnormal sweating; why this occurs has not been fully elucidated yet. In addition, horses with PPID may have greater susceptibility to infections, such as recurrent hoof abscesses; however, this has not been fully investigated at this time. Some PPID horses may also be at increased risk of developing laminitis, due to co-existing insulin dysregulation, which is discussed below.

How can I find out if my horse has PPID?

Generally, horses displaying the distinct, long hair coat associated with PPID can be identified visually; however, most horses with PPID cannot be diagnosed just by looking at them (Figures 2 and 3). Many cases of PPID do not have the late stage diseased abnormal hair growth but will show regional signs of hypertrichosis or subtle signs of disease (Figure 2). Thus, it is critical to rely on both clinical signs of disease as well as diagnostic testing. Without proper diagnosis by a veterinarian, these horses remain untreated and can experience poor health and decreased quality of life.

The recommended tests by the Equine Endocrinology Group for the diagnosis of PPID is the measurement of basal blood ACTH levels or ACTH levels in response to a test called the thyrotropin-releasing hormone (TRH) stimulation test, which is now preferred over the dexamethasone-suppression test. If your horse is showing haircoat changes, the recommendations are to measure basal levels of ACTH. However, if hair coat changes are not pronounced, it is best to perform the TRH stimulation



Figure 1. A pony displaying the classic hypertrichosis seen with PPID.



Figure 2. A horse with PPID that does not have the classic PPID hypertrichosis. This highlights the importance of screening older horses, even if they do not develop the late stage abnormal haircoat but instead show signs of early PPID with regional hypertrichosis.

test. This test is easy for your veterinarian to perform at home, without the need to take your horse anywhere. Your veterinarian will collect a blood sample, administer the TRH, and then collect another blood sample 10 minutes later. Both blood samples are sent to a laboratory for ACTH testing. The most preferred laboratory at the time of this publication is the endocrinology lab at Cornell University's Animal Health Diagnostic

Center. The combination of the ACTH values for the first and second blood samples from the TRH stimulation test will help your veterinarian determine if your horse has PPID or not. The TRH stimulation test can also tell your veterinarian whether your horse has early or late-stage PPID, which is one reason it is important to have your horse tested for PPID annually after age 15. However, if your horse is displaying clinical signs of PPID and your veterinarian recommends TRH stimulation testing before the age of 15 years, it is recommended to follow your veterinarian's advice, as there are occasional cases of PPID in horses younger than 15 years old.

How do I care for my horse with PPID?

The most common treatment currently for horses is pergolide mesylate, often referred to as pergolide or Prascend®. This medication is given orally once per day. Pergolide mesylate works by reducing the high levels of ACTH in horses with PPID. To determine the proper dose of pergolide mesylate for your horse, your veterinarian should start at the lowest dose and check your horse's basal or resting ACTH level after a few weeks of treatment. If their ACTH is not controlled, your veterinarian may recommend increasing the dose of pergolide mesylate that your horse receives each day. Once ACTH levels are controlled, it can take time before changes or improvements in clinical signs are seen. While Prascend® is the only medication currently approved by the FDA for treatment of PPID, an additional medication, cyproheptadine, has been given in addition to pergolide mesylate and may or may not be helpful for horses that do not respond to pergolide mesylate alone.

In addition, there are several non-pharmaceutical methods for managing your horse with PPID. Body clipping after the colder months have passed can be extremely helpful for horses with hypertrichosis that have difficulty shedding and maintaining their body temperature in the summer. For some horses, just removing their winter coat is enough, while others may need to be clipped regularly during the summer months, as hot and humid temperatures can adversely affect horses with PPID.

It is also important to make sure that horses with PPID always have access to plenty of water and a salt/mineral block. Access to shade in the summer, shelter from rain or snow in the winter, and proper blanketing during colder months can also help these horses in managing their body temperature, weight, and body condition. A proper vaccination and deworming plan and regular dental care are very important for maintaining your geriatric horse's weight, body condition, and overall health.

Are horses with PPID at risk for laminitis?

Horses with increased levels of insulin in their blood (hyperinsulinemia) or with abnormal insulin responses to a meal or an oral sugar test are considered to have insulin dysregulation (ID) and are at risk for laminitis. While it is commonly thought that all horses with PPID are at high risk for laminitis, it is actually the horses with both PPID and ID that are at a greater risk for laminitis (Figure 3). Horses with PPID that do not have ID are generally not considered to be at high risk for laminitis. Therefore, it is important to have your horse tested not only for PPID but also ID.



Figure 3. A horse with PPID and insulin dysregulation. This horse also does not have the classic PPID hypertrichosis but does have the regional fat deposits commonly seen in ID horses.

The Equine Endocrinology Group recommends either testing for basal blood levels of insulin or performing an oral sugar test (OST). The OST is also a simple test that your veterinarian can perform without the need to transport your horse. Your veterinarian will collect a blood sample, administer the appropriate dose of corn syrup orally, and collect a second blood sample after 60 minutes. These blood samples are sent to a laboratory for insulin analysis. The combination of these two insulin measurements (basal and response to the OST) will allow your veterinarian to determine if your horse is insulin dysregulated or not.

If your geriatric horse has ID, proper management, mainly through changes in diet, can decrease the risk of laminitis. For PPID horses with ID, it is important to work with your veterinarian or nutritionist to ensure that your horse's caloric needs are met, but with minimal added grain. Hay and forage diets are best for horses with ID but are not always adequate to maintain body condition for older horses. Therefore, balancer pellets are often recommended. Regardless, frequent monitoring of insulin should be performed by your veterinarian. For more information on ID, please look at our EMS/ID fact sheet.

Take-Home Message

PPID affects many older horses but can generally not be diagnosed just by looking at a horse. With proper management, PPID horses can live happy, high quality lives during their geriatric years. It is important to have your veterinarian test your horse annually for PPID after 15 years of age (or before if showing clinical signs). In addition, ID can affect horses of any age and can change rather quickly. Therefore, it is important to have your horse tested for ID regularly, since proper management of horses with ID can help reduce the risk of laminitis. Work with your veterinarian to screen your horses regularly for PPID and ID and to develop a personalized care plan to keep your horses healthy and happy well into their golden years.

For questions please contact adams.lab@uky.edu.

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