PPID: An up to date look at Equine Cushing's Disease

Part 1: What is ppid? Which horses get it? What are the signs?

Does your equine roster include short, sturdy, calm, fuel efficient breeds like Morgans, Arabians, Mustangs, Halffingers, Fjords, or ponies of any kind? This includes cross breeds! Does your center use horses of any breed that are over the age of 15 years? If you answered yes, then there is a high risk that you have horses with Pars Pituitary Intermedius Dysfunction (PPID), also known as Equine Cushing's Disease. Recent research has deepened our knowledge of this disease, and has allowed great advancement in diagnosis and treatment. Early diagnosis and treatment can greatly improve the health of these horses, prevent equine disability, and extend the happy working career length of your invaluable horses!

As recently as 15 years ago this was considered a disease of only the very oldest horses, and we thought most of the horses with this disease had a long curly coat, huge cresty neck, obesity and, most likely, laminitis. Now we know that this is a description of the very end stage cases. With our deeper understanding, we now know that in most breeds onset can occur in the teenage years. And in the breeds listed above the onset can be as early as 6-8 year of age. This covers a huge percentage of horses used in Equine Assisted Activities and Therapy (EAAT)!

How does undiagnosed and untreated PPID affect a EAAT organization? With increased veterinary expenses, increased horse care burdens for your staff or volunteers, possible equine disability, or even death of your horses, this is not a good outcome. Early detection will greatly improve the health, welfare and performance of your hard working EAAT horses!

As the name PPID suggests, this is a disease of the pituitary gland of horses. The pituitary is located in the skull just under the brain. Due to degeneration of nerves that connect the hypothalamus (a part of the brain) to the pars Intermedius of the pituitary an excessive amount of a hormone called ACTH (adrenocorticotrophic hormone) is secreted from this part of the pituitary into the blood stream. This hormone tells the adrenal glands to secrete an excessive amount of cortisol. Cortisol is the body's hormone of chronic stress, so day after day and week after week the adrenals are telling all the other systems of the body to essentially man the battle stations! The effects are much the same as actual physical or emotional stress, and the health of the horse will be affected in nearly all body systems. This is just a partial list of the consequences:
*Muscles may waste or weaken  
*Tendons and ligaments may weaken or fail to heal properly  
*Hooves become prone to abscesses and laminitis  
*Fat deposits may form in abnormal places  
*Hair growth may increase subtly or dramatically (ie a winter coat all year)  
*Skin defenses may decrease leading to infections like rain rot or scratches  
*Anhidrosis (failure to sweat appropriately)  
*Increased thirst and urination  
*And general immunity may decrease leading to an increase in risk for any infectious disease.

Despite all these negative consequences, there is a lot of good news for the horses at risk for this disease. We can prevent most of these outcomes in most horses by detecting the disease and starting treatment before you can see the outward signs. We can reverse some of the effects of the disease and improve the health of horses that already have obvious signs by starting treatment later in the course of the disease.

Part 2: Diagnosis

In the last 15 years there have been more than a dozen tests commercially available or discussed in the veterinary literature, so you can imagine that there has been confusion, even among veterinarians. This information may still continue to change, as there is a great deal of ongoing research. You or your veterinarian may want to look for resources from the Equine Endocrinology Group (EEG) or from the American College of Veterinary Internal Medicine (ACVIM). The information below is based primarily on the EEG’s most current recommendations, at the time of this writing.

How we best diagnose these horses depends on how advanced their disease is at the time of testing. Very late, untreated disease or cases not responding to treatment can be diagnosed just by looking at the horse: there is nothing else that causes the very long characteristic hair coat that is found in advanced PPID. But, it will greatly benefit your horses to diagnose it much earlier. For more moderate cases, measurement of ACTH levels in the blood is the best test. While there used to be seasonal restrictions, recommended fasting, and difficult sample handling for your veterinarian to worry about, this is no longer true. Current EEG recommendations are greatly simplified, making this test easier for you and your veterinarian. In the early cases, this simple ACTH test will come back in the normal range, missing this opportunity to start treatment before damage is done to the body. Many more of these early cases can be diagnosed with a thyroid releasing hormone stimulation test (TRH stim). For this test the horse is given a small dose of the hormone TRH 10 or 30 minutes before the blood sample is collected. At this time, there are seasonal restrictions for the TRH stim test, but there is also ongoing research working to solve that problem.

There are a long list of other tests that have been done for this disease. If your veterinarian offers you a test not discussed here I suggest checking out the chart of tests on the EEG website. Or use the diagnostic algorithm found at Prascend.com.
The next question is when to test and how often. You have to balance the risk of the disease with the cost of the test against your center's resources; hopefully your veterinarian can help you do this. As a rule of thumb, I currently recommend an annual or at least every other year test during the years that the horse is at risk. For Morgans, Pasos, Arabians, Mustangs, Andalusians, and all ponies I recommend starting at about age of 8 years or sooner with a history of laminitis. For all other breeds I recommend starting at about the age of 15 or sooner with a history of laminitis. Even in breeds that are not generally high risk, there are some bloodlines that have early onset, don't be afraid to start testing early if there is a known risk of laminitis or PPID in the bloodline.

Part 3: Treatment
Unfortunately, we do not have a cure for this disease right now. We do have medications that can keep the symptoms controlled and that dramatically decrease the biggest health consequences of this disease. In the recent past we had to rely on custom compounded medications for this disease. The problem is that pergolide, the best drug for most horses, is really tricky to make in a form that is stable and delivers a consistent dose. This lead to a lot of treatment failures. However, there is now an FDA approved formulation of the medication, called Prascend. This medication, given daily, controls the effects of PPID on the horse's body. It is a tiny tablet that is easy to give and most horses eat readily in their grain. In the nearly 150 horses I have managed on Prascend, the only side affect has been a small number of horses with a short term loss of appetite during the first month of treatment. In a few severe cases high doses of Prascend may combined with other medications for the best results. Your veterinarian is the best resource for these cases.

It is important to remember that we are treating the disease, not curing it. The changes in the pituitary will continue to progress in spite of any medical treatment. This means that there will be a need to retest every year or two during treatment to be sure that the treatment is still sufficient. Retesting may also be indicated after a medication or dosage change.

It is very likely that your veterinarian will mention insulin resistance (IR) or Equine Metabolic Syndrome (EMS) during the course of evaluation of horses for PPID. EMS and IR are commonly found in the high risk breeds for PPID, and researchers suspect that they are, in fact, related pathologies. I find that when PPID is brought under control first, then EMS and IR are easier to control.

Part 4. Management and myths:
In addition to the diagnosis and treatment already discussed, these horses sometimes need a little extra thought and care. Due to damage that may have already happened to their feet, they may need more frequent trimming or corrective shoeing. Be sure to be extra diligent in foot care! If you are managing a PPID horse that tends toward remaining over weight despite your best efforts, or with a history of laminitis, you need to talk to your veterinarian before allowing this type of horse to have access to grass. In some cases these horses are very thin, again talk to your veterinarian about what kind
of diet is best suited to your patient, as their needs can vary. If their hair coat remains excessively long and thick despite medication you should both talk to your veterinarian and get the horse clipped during warm weather. Finally, it is common for horse people to try to apply what has been learned about small animal vaccination intervals to horses. Unfortunately, horse vaccine intervals cannot be lengthened, and in horses with PPID, immune response to vaccines is likely to be even weaker and shorter than in healthy horses. You need to be extra diligent about regular vaccine intervals for these horses. Watch for new guidelines for older and PPID horses in the coming years.

Many alternative and complimentary treatments have been proposed for horses with PPID. The most common one purported to treat the disease is Chasteberry. Unfortunately, research has proven this one ineffective. I strongly recommend starting treatment efforts with Prascend in every case of PPID. However, if for any reason your organization has decided to use any alternative treatment instead of medication, be sure to retest to check the effectiveness of that treatment! Doing so will protect the health of your horse and potentially save you money on treatments that do not work.