Steady there

Ataxia is a common symptom of neurologic disease in horses. Understanding it can play a key role in early detection and appropriate treatment.

by Kelli Taylor, DVM

As Sarah began working with her young Warmblood gelding, preparing him for under saddle work, she noticed something odd. Some days he would look a bit “off” behind, though not consistently enough for her to pinpoint the cause. A general exam labeled him as neurologic, and a trip to the local equine hospital left them with the unfortunate diagnosis of Wobblers.

It can sometimes be very hard to tell if a horse is displaying lameness, or has underlying neurologic deficits that are altering his performance or gait. Fortunately, your veterinarian can help you determine whether or not your horse’s central nervous system is to blame by performing a neurologic examination. During the exam, your vet will either rule out or confirm that the nervous system is involved, and attempt to locate where the problem is within the system. Mental status and behavior will be evaluated along with gait and posture. The head, neck, forelimbs, body and hind limbs will all be assessed for any neurologic abnormalities.

Understanding ataxia

One of the more common and disturbing gait deficits that can arise from neurologic disease is ataxia. The act of walking may seem simple to you, but consider a baby learning to walk. He must first learn how to crawl, then to stand, then how to balance while taking a step or two, and then finally put multiple steps together in a row to produce walking. This ability to coordinate multiple muscle contractions and relaxation is voluntary (it requires the desire to move); is developed over time (through the strengthening of muscle and nerve connections – “muscle memory”); and requires the proper integration of the brain, spinal cord, peripheral nerves and muscles.

A lack of coordination during voluntary movements, such as walking, is called ataxia. It occurs when there is a disruption or failure of information flow at any point along the pathway from the brain to the muscle, or from the muscle back to the brain. The best example I can think of is to think of a time when you were the designated driver at a cocktail party. When you observed the clumsiness and swagger of those who had too much to drink, you were seeing alcohol-induced ataxia.

The most common cause of ataxia is cranial and/or spinal trauma, followed by cervical vertebral myelopathy/instability (wobblers), infection (EPM, WNV, EEE/VEE/VEE, EHV-1, rabies), and degenerative disease (EDM).

Trauma-induced ataxia

Trauma to the brain most commonly occurs when a horse rears up and flips over backwards, hitting the back of his head on the ground. It can also happen if a horse rears up when loading into a trailer or in a barn with a low ceiling. Trauma to the spinal cord can occur when a horse collides with a relatively immobile object or hits the ground hard during a fall. These type of accidents cannot always be prevented, but are less likely if your horses are trained to load
calmly, are taught to give to pressure rather than pull back, and are turned out in a safe paddock or pasture free of unnecessary objects and with good footing. If a traumatic episode is observed, an immediate evaluation by your veterinarian is recommended. He may be able to administer lifesaving medications that can reduce inflammation within the brain and/or spinal cord.

**Wobblers syndrome**

Cervical vertebral malformation (CVM)/instability (CVI) or Wobblers syndrome causes ataxia, usually of all four limbs, through compression of the spinal cord by the cervical vertebrae of the neck. The vertebrae can either be malformed from congenital changes (most commonly found in young horses) or arthritic changes (most often found in older horses). There appears to be a genetic predisposition that, when combined with nutritional imbalances when young and/or rapid growth, may produce malformation of the cervical vertebrae. Trauma can make the malformation worse and aggravate the symptoms. Aggressive nutritional management and controlled exercise in youngsters, along with early diagnosis, can actually reverse the symptoms and cure the disease.

**Infections and immune invasions**

Infectious causes of neurologic disease include equine protozoal myeloencephalitis (EPM), viral encephalitides (EEE/WE/EVE, EHV-1, and rabies) and bacterial infections (meningitis, tetanus, botulism).

- **EPM:** Equine protozoal myeloencephalitis is caused by a protozoan parasite, *Sarcocystis Neurona*, which is carried by opossums. When horses eat feces from a carrier opossum, usually hidden in hay or other feed, they become infected. The protozoa leave the digestive tract via the circulatory system and may invade the central nervous system, causing ataxia. Most infected horses do not develop neurologic symptoms and cannot transmit the parasite directly to another horse. The onset of neurologic symptoms is usually gradual, and treatments are available to kill the parasite, often with complete recovery. To help prevent EPM, keep opossums away from the barn and food storage areas. This may sometimes require the aid of a barn cat or dog. Reject any feed that arrives contaminated with animal feces.

- **Mosquito-borne diseases:** Horses are at risk of contracting these diseases throughout the bug season, depending on the geographic area in which they live. These diseases include West Nile Virus and Eastern, Western and Venezuelan Encephalitis. Fever accompanies ataxia in horses that have contracted one of these viruses. The only treatment currently available for these diseases is good supportive care, but there are tried and true vaccinations that help prevent them and/or decrease the severity of disease if the virus is caught. Mosquito bite prevention and the removal of standing water are also very helpful.

- **EHV-1:** Equine herpes virus-1, also known as rhinopneumonitis, is endemic in our horse population and normally causes mild respiratory disease or sometimes abortion in pregnant mares. In some horses, EHV-1 causes vasculitis (inflammation of the blood vessels) in the spinal cord and/or brain, leading to neurologic problems such as ataxia. It is not yet known why some horses develop the neurologic condition and others only the respiratory condition. Most horses that become infected with EHV-1 do not go on to develop the neurologic condition, but those that do soon become uncoordinated and weak and have difficulty standing seven to ten days following a respiratory outbreak or abortion. There are vaccines that help reduce the
respiratory form of the disease, but no available vaccination protects against the neurologic form. Because the virus is easily spread between horses, prevention involves isolating horses that are traveling from those that are not, and practicing good biosecurity procedures, such as hand-washing between handling horses and using individual water and feed buckets.

- **Rabies:** This is a possible cause of ataxia in endemic areas and is contracted via a bite from a rabid animal such as a fox, bat, skunk, raccoon or dog. The rabies virus enters the nervous system at the level of the bite, and may cause changes in mentation and/or ataxia depending on the location of the bite. There is no treatment for rabies once signs appear, but there is a good vaccine available. The vaccination is recommended for horses that live in endemic areas.

**Bolster the immune system**

Horses with a healthy immune system are more likely to recover quickly after contracting a bacterial, viral or protozoal disease, so it is very important to feed good quality hay or pasture with the correct mixture of vitamins and minerals, along with encouraging exercise and removing any unnecessary stressors in your horse’s life. If you are planning to travel with your horse to a competition or show, I recommend you feed him immune boosting herbs, such as Echinacea, and/or antioxidants such as Vitamin E and C, for two weeks prior to travel.

The bottom line is that neurologic disease affects a very small percentage of our horses, but it’s good to be aware they exist and that many are preventable through good management.

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**What about EDM?**

Equine degenerative myeloencephalopathy (EDM) is a disease of young, growing horses and has been linked to vitamin E deficiency. It is characterized by the slow onset of mild symmetrical hind limb ataxia that eventually progresses to the fore limbs. The symptoms can often mimic those of CVM, but EDM horses tend to be remarkably weaker. It is thought that certain families of horses may have a predisposition to poor absorption of dietary vitamin E. These horses require a diet that is rich in this vitamin, so that proper amounts may be absorbed. Vitamin E plays a critical role in normal nervous system health by acting as a scavenger of free radicals produced in most metabolic processes. The easiest and least expensive way to ensure that horses are ingesting sufficient vitamin E is to feed good quality green grass or hay. If pasture or hay quality is suspect (this can be confirmed via nutrient analysis), dietary vitamin E supplementation at 1,500 to 2,000 IU/day may be indicated.

*Dr. Kelli Taylor is ...*

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