

EQUINE REPRODUCTION SVC

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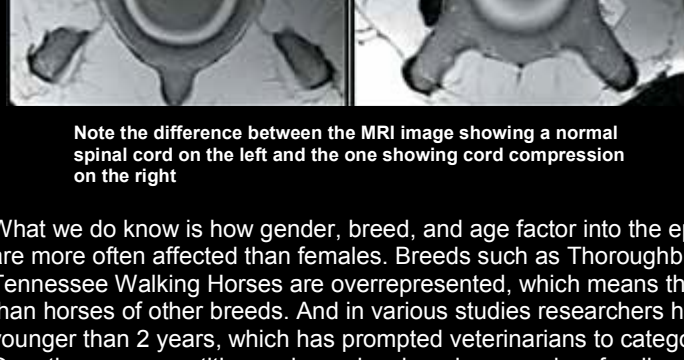
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Wobbler Syndrome: What We Know and Where We're Headed

Cervical stenotic myelopathy (CSM), a neurologic disease commonly known as wobbler syndrome, was first reported anecdotally back in the mid-1800s. Skeletal malformations of the neck vertebrae in affected animals lead to narrowing of the cervical spinal canal and subsequent spinal cord compression. Clinical signs primarily include neurologic deficits, with the hind limbs typically more severely affected than the forelimbs. In severe cases, veterinarians might recommend euthanasia for humane reasons and to guard horse and human safety. Equine CSM is a multifactorial disease, meaning it has many causes. High planes of nutrition (overfeeding), increased growth rates, alterations in zinc and copper concentrations, and genetic determinants could be responsible. Researchers have clearly established the relationship between nutrition, mineral intake, and skeletal development; any disruption in this balance can result in asynchronous (uneven) skeletal growth and possible clinical signs of disease. While we know or suspect that all these factors play a role in CSM development, the exact mechanisms leading to clinical disease remain unclear.



Note the difference between the MRI image showing a normal spinal cord on the left and the one showing cord compression on the right

What we do know is how gender, breed, and age factor into the epidemiology of this devastating disease. Males are more often affected than females. Breeds such as Thoroughbreds, American Saddlebreds, Warmbloods, and Tennessee Walking Horses are overrepresented, which means they seem to develop the disease more often than horses of other breeds. And in various studies researchers have identified the mean age of CSM horses as younger than 2 years, which has prompted veterinarians to categorize CSM as a developmental bone disease. Over the years practitioners have developed approaches for diagnosing CSM. All clinical workups begin with the veterinarian conducting a thorough neurologic exam, looking primarily for signs of ataxia (incoordination). The next step is using radiography to visualize the neck vertebrae. Researchers have defined what's normal or healthy for a neck based on skeletal anatomical measurements at each vertebral site, which helps veterinarians identify presumed areas of spinal canal narrowing. Veterinarians can perform myelograms (special radiographs taken after injecting dye into the spinal canal) to see the actual compression. Once a veterinarian diagnoses CSM in a horse, the owner has several management and treatment options to choose from. More conservative approaches center on dietary modification and anti-inflammatory administration to slow growth rates, reduce swelling of nonskeletal tissues, and possibly allow vertebral bone remodeling to reduce cord compression. More aggressive approaches involve surgical intervention (e.g., cervical vertebral fusion) to alleviate cord compression. Developments in diagnostic imaging modalities, such as MRI and CT, have helped veterinarians better characterize the lesions along the entire neck post-mortem. High-resolution images from multiple angles and the ability to visualize the cervical vertebrae, spinal cord, and associated soft tissues together provide powerful data for studying CSM pathology. A combination of imaging modalities, clinical resources, and thorough necropsy examination results are providing new insights for CSM research. Upcoming changes in these imaging units to accommodate the horse's large size will allow veterinarians to use CT or MRI, where available, to examine CSM cases clinically in the future.

Finally, due to rapidly developing technologies, researchers are now examining the equine genome to identify specific genes that may contribute to CSM susceptibility. This is an exciting area of research that could have an important impact both on breeding decisions and management of potentially susceptible horses.

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