

Lameness or neurological disease

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Determining whether a gait abnormality is caused by a neurological disorder or a musculoskeletal condition is a complex clinical challenge, especially when the abnormalities are mild. The characteristics of the deficits can vary slightly between these two systems. However, there are several general guidelines that can aid in distinguishing between the two causes.

The history and progression of a complaint can provide valuable insights in many cases. For example, a horse with a gait abnormality that improves with rest and recurs with exercise is almost certainly experiencing musculoskeletal disease, as this pattern is rarely linked to neurological conditions. Moreover, a positive response to nonsteroidal anti-inflammatory drugs (NSAIDs) strongly points to musculoskeletal disease, as does a history of the lameness "warming out" during exercise.

The next step in the process is to conduct a thorough physical examination, carefully assessing muscle development and symmetry, as well as checking for enlarged joints or tendons. A detailed examination and palpation of musculoskeletal structures should also be performed. It's essential to observe the hooves and evaluate digital pulses in all four feet to rule out laminitis. Rectal palpation is often useful in ruling out iliac thrombosis, as well as pelvic fractures or injuries, both of which can present with clinical signs that may be mistaken for ataxia. Iliac thrombosis, as well as pelvic fractures or injury can lead to clinical signs that may be confused with ataxia.

Gait abnormalities

In most cases, a standard lameness examination is essential, as musculoskeletal lameness is far more common than neurological conditions. However, in horses with clear neurological signs, this step may not be necessary or appropriate. After completing the routine physical examination and lameness assessment, proceed with a neurological examination. This should include:

1. Sensorium – mental status
2. Gait and posture
3. Postural reactions
4. Muscle tone, size and spinal nerve reflexes
5. Cranial nerves

A few key observations can help differentiate gait abnormalities caused by musculoskeletal disease from those associated with neurological conditions. Horses with musculoskeletal disorders typically exhibit consistent and regular gait abnormalities, with the same pattern occurring with each step. In contrast, horses with neurological gait deficits show irregularities, as they are unable to place their limbs in the same position consistently from

step to step. The nervous system is responsible for the rate, range and direction of limb movements, which helps in interpreting the movements during a neurological examination. Horses with neurological disease exhibit gait abnormalities during all phases of the examination, including walking, turning, downhill movement, and circling. However, the neurological deficit might be extremely mild and difficult to interpret when the horses for example is walking on a straight line. That is one reason for why the neurological examination incorporate evaluation of the gait under different conditions. If a horse only demonstrates a problem when moving downhill, but not during other parts of the neurological examination, it is more likely to have a subtle musculoskeletal issue rather than a neurological one. Additionally, the limb can be blocked, and the neurological examination repeated. If an obvious lameness persists despite the block, it raises concern for a potential neurological disease. However, if the lameness is resolved with the block, it rules out neurological disease as a concern.

In general, neurological problems caused by lower motor neuron deficits are the ones that most commonly are mistaken for lameness – especially if there are milder neurological deficits. Mild ataxia with proprioceptive deficits are usually not mistaken for lameness but can be overlooked if the horse gait never had been evaluated during turns and from the side.