

Tell Me Where It Hurts! The Headache of Complicated Equine Lameness

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Introduction

Joint disease is a leading cause of poor performance in horses, resulting in significant wastage and economic losses for the equine industry¹. Not only is it a source of financial stress for owners, it can decrease quality of life for our patients, and serves as a source of frustration for veterinarians. A multitude of clinical and research studies have been performed over the last century that offer us a greater understanding of the etiology and pathogenesis of conditions that result in lameness, as well as options for diagnosis and treatment. Despite all of this data, there exists significant overlap in clinical signs associated with pathology in particular regions of the body, confirmation of the source of discomfort is not always discrete, and some horses fail to respond in an expected manner with focused treatment. The aim of this lecture is to review localization of lameness, available treatment options, and methods for maintaining longevity of the equine performance horse with a focus on osteoarthritis.

Lameness Examination

For workup of any lameness, it is imperative to obtain a complete history including clinical complaint, any treatments or periods of rest, and owners' short- and long-term expectations. Then, a thorough musculoskeletal examination should be performed, including notation of the horse's overall conformation, level of fitness, and any obvious physical abnormalities. Dynamic evaluation should include assessment in hand, on the lunge line, and through all of the horse's gaits. Additionally, evaluation under saddle or in other specific conditions may be necessary for more subtle lameness or performance issues. A variety of exercise surfaces (soft and firm ground) may be warranted if lameness is subtle or inconsistent. Full flexion tests should be performed on every horse that will tolerate it to obtain a thorough understanding of possible regions of discomfort.

Accurate gradation of the animal's lameness will allow for comparisons after diagnostic analgesia and response to future treatments. Frequently this is done based on subjective evaluation and utilization of a grading scale (i.e. American Association of Equine Practitioners scale 0-5). However, agreement among veterinarians is poor and subject to significant bias, particularly when lameness is mild or multiple limbs are involved². As a result, solutions for objective measurement of lameness have been developed including stationary force plates, which are primarily limited to research use, and inertial sensor systems³. While inertial sensor systems have inherent limitations in that they function based primarily on left to right asymmetry, they have been shown to be able to detect more subtle lameness than subjective evaluation⁴. However, further investigation is needed into gait evaluation in clinically sound horses, identified evidence of asymmetric head and pelvic motion patterns induced by lunging that may obscure true lameness and further confuse examiners⁵. Indeed, we must question whether some mild asymmetries are true lameness, which implies a pathological origination, or normal variation.

Diagnostics

There are very few conditions that manifest with pathognomonic gait abnormalities, including radial nerve paralysis, fibrotic myopathy, stringhalt, upward fixation of the patella, and sweeney, which allow the veterinarian to promptly make a diagnosis. However, with the majority of lameness, significant overlap in clinical presentation exists. Following dynamic assessment and identification of gait

abnormalities, including primary and induced lameness, the examiner must decide what additional diagnostics may be appropriate. In most instances, diagnostic analgesia is warranted for lesion localization and to establish clinical relevance of any future imaging findings. However, for horses with significant lameness and certain historical factors, such as a fall or sudden lameness during work, diagnostic analgesia as a means of lesion localization may be contraindicated owing to a possible stress fracture or incomplete fracture. Additionally, foals or fractious horses may not be amenable to diagnostic analgesia. In some cases, there may be high clinical suspicion for a particular pathology based on palpation, degree of lameness, and particular gait abnormalities which may allow omission of this step. However, in instances where diagnostic analgesia has been previously bypassed and treatment has yielded an unsatisfactory response, confirmation of lesion localization is essential.

Diagnostic analgesia

Where diagnostic analgesia is to be attempted, the veterinarian must have a clear understanding of anatomy and a stepwise manner should be instituted, beginning distally and working proximally. If there is suspicion for joint involvement, intraarticular analgesia may be warranted. While previously thought that intraarticular analgesia would not affect the classic distal to proximal approach to perineural analgesia, a recent study found that horses with induced foot lameness had their lameness improved following intraarticular analgesia of the stifle⁶. This finding, along with numerous studies over the last few years showing the potential for substantial proximal diffusion of local anesthetic^{7,8}, further complicates the diagnostic workup and suggests that diagnostic analgesia is not always as clear-cut as one might hope. Additionally, when undertaking a blocking examination, it should be well-understood by both the diagnostician and client that a single source of lameness may not exist, and partial responses to blocking owing to multi-limb lameness or secondary lameness problems are a commonality.

Possible complications with diagnostic analgesia include mild local swelling, inadvertent penetration of a synovial compartment when performing perineural analgesia, synovitis with intra-articular analgesia, and rarely cellulitis or septic synovitis. Poor technique could lead to inadequate blocking which prolongs the lameness examination, confounds the results, and, depending on the horse's tolerance for repeated injection, may prevent further examination in that session. Prior to undertaking a blocking examination, the horse's temperament as well as consideration for possible incomplete fractures should be considered to avoid injury to the diagnostician and the possibility of catastrophic injury to the horse.

Imaging

Once an area of interest has been identified, either by strong clinical suspicion or from diagnostic analgesia, imaging should next be performed. Options include radiography, ultrasonography, nuclear scintigraphy, magnetic resonance imaging (MRI), and computed tomography (CT). Thermography or fluoroscopy can be indicated in certain cases. While radiography has classically been utilized for identification of bone-related pathology and ultrasonography for soft tissue pathology, the overlap in clinical conditions is significant and multimodal imaging is likely warranted. More advanced imaging with nuclear scintigraphy, MRI, and CT is increasingly being used and advancing our understanding of pathologic processes. However, advanced imaging modalities may be cost-limiting, and each diagnostic test has advantages and disadvantages which should be thoroughly considered.

Joint Disease

Joint disease is the primary cause of lameness in horses¹, is a costly problem to manage for horse owners, and can have significant impacts on the overall health and well-being of the horse. Joint disease can range from mild synovitis to crippling end-stage osteoarthritis, with endless degrees of lameness and performance limitations in between. Having an understanding of basic joint biology and abnormalities that occur with disease can allow you to tailor your treatment plan for the individual horse.

The joint is a complex structure composed of a variety of connective tissues including articular cartilage, subchondral bone, periarticular soft tissue structures, synovium and synovial fluid, all of which can be altered in disease states. Perhaps the most important structure in terms of joint disease is the articular cartilage, which is responsible for distribution of loads across the joint, protecting the subchondral bone plate, and providing near friction-less gliding during movement. As cartilage is avascular, its health and nutrient exchange is directly dependent on the global health of the joint. Thus, treatment is generally aimed at targeting inflammatory mediators present in synovium and synovial fluid, including matrix metalloproteinases, cytokines, and prostaglandins, to minimize cartilage degradation and slow the degenerative process.

Treatment

There are a multitude of treatment options for equine joint disease and osteoarthritis. The main goals of treatment are improving lameness (decreasing pain and inflammation) and slowing the progression of disease. Both medical and surgical therapies are available. Medical therapy can include oral joint supplementation, rest and non-steroidal anti-inflammatories, intra-articular medications, extracorporeal shockwave therapy, bisphosphonates, and polysulfated polysaccharides. Intra-articular medications include corticosteroids, viscosupplementation, and an expanding list of orthobiologic products. Surgical therapy, retirement, or euthanasia could also be warranted in end-stage disease when medical treatment fails to provide acceptable comfort.

Prognosis

When a diagnosis of joint disease or osteoarthritis is made, clear expectations should be set for the owner. Osteoarthritis is a progressive degenerative disease initiated by overuse or possibly an initiating traumatic event. Once the degenerative process is established, management will be lifelong with long-term prognosis dependent on how the horse responds to the therapies provided.

References:

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