

Equine Arthritis

Osteoarthritis, also known as degenerative joint disease, is a painful, progressive condition with no known cure

Overview

The term arthritis refers to an inflammation of the joint. There are different kinds of arthritis, such as septic arthritis and rheumatoid arthritis. However, the most important arthritis affecting horses is osteoarthritis (OA), which is characterized by the erosion of articular cartilage—the layer of specialized tissue that lines the ends of the bones inside the joint. Osteoarthritis is a major cause of lameness in athletic horses. Recent estimates indicate that 60% of equine lameness problems are OA-related.

Osteoarthritis, historically referred to as degenerative joint disease (DJD), is a painful, progressive condition with no known cure. Clinical signs of OA include heat, swelling (i.e., joint effusion or a “filled” joint), pain, and a reduced range of motion in the affected joint(s).

Development of Osteoarthritis

Articular cartilage is a highly specialized body tissue composed of cells (chondrocytes) embedded within an “extracellular matrix” that contains collagen, proteoglycans, and water. Articular cartilage lines the ends of the bones within the joint and permits smooth, frictionless movement. In addition, articular cartilage is shock-absorbing and allows for the transfer of body weight loads during movement.

In normal joints the articular cartilage’s extracellular matrix is continuously “turned over” or remodeled to maintain a healthy, optimally functioning tissue. This means existing extracellular matrix components are degraded and replaced by new molecules synthesized by the chondrocytes.

In arthritic joints the balance between the degradation and synthesis of the extracellular matrix is disrupted favoring the destruction of the tissue. This destruction is mediated by various pro-inflammatory



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molecules such as cytokines, nitric oxide, free radicals, and prostaglandins and enzymes called matrix metalloproteinases.

The end result is a physical degeneration of the cartilage that usually occurs in conjunction with changes in the underlying bone (i.e., formation of enthesophytes and osteophytes) and associated soft tissue structures, primarily the synovial membrane and joint capsule.

Causes of Osteoarthritis

Osteoarthritis can develop in normal joints without any apparent cause. This form of osteoarthritis is referred to as primary OA. Alternatively, OA can develop secondary to trauma (e.g., an intra-articular chip fracture) or in horses with poor conformation, with inappropriate shoeing, or horses with other musculoskeletal abnormality such as an untreated osteochondritis dissecans (OCD) lesions.

Ringbone (involving the first or second phalanx) and bone spavin (in the hock joints, such as the distal intertarsal or tarsometatarsal joints) are both unique examples of OA in the horse that occur in high-load-low-motion joints.

Diagnosis

A full physical examination to rule out

other potential causes for the observed lameness (e.g., neurological diseases), a complete lameness examination, the use of nerve and/or joint blocks to assist in localizing the source of the lameness, and a synovial fluid analysis are all important first steps in diagnosing OA. Radiography (X rays) remains the primary means of imaging joints to diagnose osteoarthritis (or other bony abnormalities); however, advances in diagnostic imaging have and continue to occur. Ultrasonography, computed tomography, magnetic resonance imaging, nuclear scintigraphy (a bone scan), and diagnostic arthroscopy can also be employed to assist in diagnosis.

Classic signs indicative of OA observed on radiographs include effusion, the formation of osteophytes or enthesophytes (which are bony changes evident at the margins of the joint that result from remodeling of the joint during the development of OA), eburnation or sclerosis (increased density), or lysis of the subchondral bone. Joint space narrowing might also be evident.

One of the major problems in diagnosing osteoarthritis is there often is a disparity between the observed clinical signs and the degree of changes in the bone and/or soft tissues of the affected joint(s) that are noted on radiographs. (The joint might be in better shape than the radiograph indicates, or vice versa.)

Treatment

Despite aggressive research efforts, there is no cure for osteoarthritis. Instead, the goal for managing OA is to slow the progression of the disease once clinical signs of disease have become evident. At present, a multi-modal approach to managing OA is recommended. Using a combination of therapies instead of relying on only one or two techniques is thought to maximize relief of pain and quality of life.

Additional Treatment Options

A number of alternate therapies can also be considered in horses diagnosed with osteoarthritis. For example, interleukin-1 receptor antagonist protein (IRAP) to block the cytokine interleukin-1 from further damaging an arthritic joint is used for OA-affected horses.

Extracorporeal shock wave therapy (ESWT), which involves applying beams of energy to the affected joints, also might benefit OA-affected horses.

Finally, surgical fusion of a joint by removing the articular cartilage and essentially creating one long bone can also be considered. This might be possible in some of the lower motion joints (e.g., interphalangeal joints), but not for higher motion joints such as the knee.

All treatment options should be fully discussed with your veterinarian.

Prognosis

The prognosis for horses diagnosed with OA is highly variable and depends on a number of factors such as the number and location of affected joints, the underlying cause, the rate of disease progression,

horse's age, and response to therapy. In many cases, OA is career-limiting in athletic horses (even young and otherwise healthy horses). In horses that are severely affected and continue to be uncomfortable despite instituting a multi-modal treatment program, OA is a life-threatening condition.

Prevention

Osteoarthritis can develop as a primary cause or secondary to other underlying conditions as described above. Since there is no cure for OA, the main goal is to prevent or slow the progression of OA. Limiting repetitive trauma to the joints, addressing underlying joint abnormalities (e.g., removing OCD lesions or articular chip fractures, improving conformation, and having the feet trimmed appropriately) are all important steps in minimizing the development of osteoarthritis. Some owners and trainers routinely administer oral joint health supplements, or use polysulfated glycosaminoglycans or hyaluronic acid in young, healthy horses, to decrease the chances of developing OA; however, there is no or only a limited amount of evidence that this practice is effective. ◀

FAST FACTS

- **Osteoarthritis (OA)** is the most common and important form of arthritis in horses;
- OA is a painful, debilitating, and career- and life-threatening condition caused by the destruction of articular cartilage;
- **Classic signs** of OA include pain, heat, swelling, and a decreased range of motion (lameness);
- **Diagnosing OA** can be challenging and involves a complete physical and lameness examination in combination with one or more imaging modalities such as radiography (X rays), bone scans, and diagnostic arthroscopy;
- **Since there is no cure** for OA, the goal is to slow the progression of the disease. This is achieved using a multi-modal treatment approach involving pain management, supplements, non-weight bearing exercise, and weight management;
- **Alternate therapies** are also available, and more are being developed (e.g., gene therapy) to help combat this disease.



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