



Northeast Pennsylvania Equine Clinic, L.L.C.

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Preventing Degenerative Joint Disease

Pain, heat, swelling in a joint, lameness, diminished range of motion... These are the signs of joint inflammation which, if left untreated or if poorly treated, will result in damaged joint (articular) cartilage producing what is termed **degenerative joint disease** (DJD) or osteoarthritis. DJD is seen very commonly among horses. If the disease has become chronic, Xrays will reveal new bone formation around the joint beginning as bone spurs, narrowed joint spaces, increased density of the subchondral bone (the ends of the bones that meet in a joint and are covered with cartilage), and small deposits of mineralization or bone called osteophytes. Degenerative joint disease can be caused by overuse or abuse of a joint, by the use of steroids within a joint, or by joint instability.

Let's first take a look at what is happening in a joint which is inflamed. The normal joint in the limb of a horse is enclosed by the synovial membrane which acts as a permeability barrier and the cells of which produce the joint fluid or synovial fluid contained within the joint. This synovial fluid functions to lubricate the joint and is the only vehicle for exchange of nutrients within the mature joint. Just outside of and closely associated with the synovial membrane is the fibrous joint capsule.

Increased volume of synovial fluid or what is termed **synovial effusion** develops in an inflamed joint when increased amounts of fluid are produced and when removal of fluid is impeded by venous and/or lymphatic obstruction and/or the presence of infection. The **pain** in an inflamed joint comes from

pain receptors in the joint capsule, the ligaments around the joint and the subchondral bone. **Decreased range of**

motion can be related to pain, the increased volume of synovial fluid and changes in the synovial fluid which diminish its lubricating ability and thickening of the joint capsule.

Diagnosis

Before treatment of a joint problem can be initiated, it is necessary to determine which joint or joints are involved and the type and stage of the disease present. This is accomplished by careful palpation, manipulation and flexion tests and the following diagnostic measures: regional anesthesia or anesthesia directly into the joint (intra-articular anesthesia) to confirm the site of the problem, laboratory analysis of the synovial fluid, X-ray (radiography), bone scan (nuclear scintigraphy), and diagnostic arthroscopy (viewing the inside of a joint through a small surgical incision using a fiberoptic instrument or arthroscope). Arthroscopy is done under general anesthesia in a surgical facility. Bone scans and arthroscopy can detect joint disease before abnormalities would be seen on Xrays and before irreversible damage is done.

Treatment

Once fractures and other bone diseases such as OCD have been ruled out, treatment is begun. Rest of the horse is ideal, with swimming passive motion (picking up the horse's leg and manually flexing an extending the joint for him), and hand exercise. Local application of warmth by warm water hosing and, if necessary, application of a furacin/DMSO or alcohol/glycerin sweat will be helpful.

Preventing Degenerative Joint Disease

The most useful drugs for the prevention and treatment of degenerative joint disease are discussed below:

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

The most commonly used NSAID is phenylbutasone or “bute”. NSAIDs are effective in preventing and treating pain and joint effusion because they block one of the two pathways of inflammation in the body. Other NSAIDs include Banamine, Arquel, and Naproxen. Complications include oral and gastrointestinal ulcerations, protein losing enteropathy, and renal papillary necrosis (kidney disease). Ponies are particularly susceptible to these side effects.

Corticosteroids

Corticosteroids are more potent anti-inflammatory agents than NSAIDs because they block both of the inflammatory pathways. Corticosteroids, such as Depo-Medrol, rapidly relieve joint pain, reduce joint effusion and promote the production of a more normal joint fluid. There are unfortunately several possible side effects: 1) Rapid deterioration of the joint cartilage and **advancement** of degenerative joint disease, referred to as a steroid arthropathy; 2) Deposits of new bone outside of the joint which results from inadvertent injection into the soft tissues around the joint (osseous metaplasia); 3) Infection in a joint which ordinarily results from contamination at the time of injection, but may result from blood-borne bacteria (septic arthritis). Corticosteroids diminish the body’s ability to resist infection. 4) Temporary increase in heat, pain and swelling in the joint, known as post-injection flare-up. Corticosteroids should never be used in a joint which is

already infected or which has a fracture. Careful selection of horses as candidates for corticosteroid treatment is essential.

Adequan (a Polysulfated Glycoaminoglycans or PSG)

PSG is a semi-synthetic form of a normal constituent of articular cartilage. The PSG product marketed for horses is Adequan which was FDA approved in 1984. PSG inhibits enzymes released during inflammation which degrade articular cartilage. In addition, PSG helps to produce a more normal joint fluid and aids in cartilage building, thereby being particularly useful in DJD. The drug may also aid in the treatment of infectious arthritis. Horses are usually treated with Adequan once every 5 to 7 days for 4 to 5 weeks with an intramuscular injection.

Hyaluronic Acid (HA)

Hyaluronic acid is a naturally occurring substance found in connective tissue and in the synovial fluid. HA is important in forming a barrier that locks out blood cells and their products into the joint. It also gives joint fluid its lubrication ability. When a joint is inflamed, injection of HA into that joint improves the quality of the synovial fluid and restores normal lubrication of the joint. Improvement in lameness occurs and training usually can be resumed 2 weeks following the injection. (A second treatment is sometimes advisable.)

Conclusion

What can you as horse owners and trainers do to prevent degenerative joint disease?

Preventing Degenerative Joint Disease

- ❑ Warm up your horses properly before every workout. Walk or jog you horse in both directions for at least 10 minutes.
- ❑ Allow your horse a good conditioning program following layoffs. (If your horse has not worked over the winter, allow for approximately 6 weeks to gradually put him into work.
- ❑ Properly prepare your horse before attempting relatively difficult movements such as sliding stop[s], roll-backs, flying lead changes, etc.
- ❑ Do not work your horse past his point of fatigue.
- ❑ Have feet properly trimmed and shod.
- ❑ Avoid hard surfaces and poor footing.
- ❑ Keep your horse physically fit with good nutrition, grooming, exercise and veterinary care.

When joint inflammation does occur:

- ❑ Treatment should be started as early as possible in order to maximize the opportunity for complete healing without degeneration of the joint cartilage. The treatment would be selected following thorough veterinary evaluation with consideration as to the age, use, training schedule and value to the horse, and the stage and severity of the disease process.