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Medications - Mar 9th, 04

General Information

As horse owners, you have been bombarded with numerous articles and advertisements that deal with the prevention and treatment of joint disease in horses. Although joint therapy has been primarily targeted at Thoroughbred and Quarter horses, there are even miniature horses that deal with the same sorts of problems. Breeding stallions and driving horses are especially prone to joint soreness.

Traumatic joint disease in horses includes synovitis (inflammation of the fluid-producing membrane), capsulitis (inflammation of the fibrous joint capsule), articular cartilage and bone fragmentation, ligamentous tearing, and eventually arthritis. In most cases, the disease process primarily involves soft tissue overuse and injury and cannot be diagnostically confirmed except for arthroscopy... You have to trust your veterinarian to decide when joint injections may be beneficial for your horse. There is no “gold standard” for the diagnoses of preliminary joint disease in the horse as radiographic changes are usually indicative of irreparable harm.

Aggressive treatment in joint disease is indicated to decrease immediately soft tissue swelling and inflammation as well as to postpone the onset of permanent osteoarthritic changes. There is inherent difficulty in identifying joint pathology by any other means than subjective examination and lameness or “shortness of stride” reports from trainers. The goal of any intraarticular (medications put directly into the joint) therapy is to stop problems before they occur rather than wait for abnormal radiographs and then start aggressive therapy.

Inflammatory and degradative enzymes that destroy normal joint environments can be altered by use of hyaluronic acid (HA) and corticosteroids injected into the joint. The combination of the two has been scientifically proven to have a more thorough and lasting effect than HA alone or corticosteroids alone. Medications introduced into joints by human physicians that specialize in sports medicine are becoming more commonplace. Previous generalizations and perpetuation of myths about damage to joint environments caused by corticosteroids are primarily unfounded. The belief that corticosteroids cause damage or perpetuate cartilage destruction can only be experimentally repeated by multiple joint injections over days to weeks. Typically, when there is mild soreness (joint capsulitis or synovitis) in a joint, and joint therapy is instituted 2 to 3 times per year, the environment inside the joint becomes more hospitable to cartilage, not destructive. Damage may occur from corticosteroid injection alone when there is cartilage fragmentation and bone alterations in a joint, usually associated with lameness. This is why your veterinarian may require a radiograph before instituting joint therapy. Interestingly, even in joints that have documented bone fragments, cartilage damage does not occur until joints are repeatedly injected with corticosteroids routinely over many days and weeks.

The metabolism of the equine joint is different than in other species. They are not afflicted with “Charcot-Like” arthropathy that occurs in humans with the development of arthritis from corticosteroid injections. It has been proven that corticosteroids and HA together allows the natural synovial lining of a joint to make a more viscous and lubricating environment.

Intraarticular Hyaluronic Acid (HA)

Probably the most commonly used HA products are Hylartin-V, HyVisc, Legend or Hyalovet. All of these products are labeled for intraarticular use insuring purity and consistency with each individual manufacturer. MAP-5 is hyaluronic acid used in sperm extender and is not labeled for, but has been used in joint therapy. HA is normally synthesized by the synovial membrane. HA is responsible for the boundary lubrication of articular cartilage. Experimental evidence combined with anecdotal reports from equine practitioners that do sports medicine specialties, report that using the highest molecular weight (thickness) of HA provides the most benefit. Polysulfated Glycosaminoglycans (PSGAG’s) The most common example of this type of product is Adequan. This product is used only by intramuscular injection and will cause joint inflammation if used intraarticularly. These products are primarily used as the building blocks for successful cartilage reparation. This product is also usually used when cartilage damage is already present rather than in acute joint inflammation. Arteparon is the human equivalent to Adequan and the chemical structure of the two products is identical. Chondroitin sulfate is the most commonly used GAG in these products and is harvested from bovine lung and trachea.

Oral Joint Supplementation

Chondroitin sulfate and various other GAG’s can be found in oral supplements. Pure chondroitin can be found in Flex-Free and with a combination of nutrients from the sea mussel in Syno-Flex. Most recently glucosamine, chondroitin and various other GAG’s have been combined in the product Cosequin. Benefits of these oral therapies alone are difficult to prove experimentally, so usually we treat aggressively with intraarticular medication and then supplement the horse with oral products. Recently there has been much debate about whether horses can even absorb oral forms of joint supplementation. For years, we have used data extrapolated from human research studies, and since horses are herbivores and have different GI absorption characteristics, efficacy of oral supplementation is in question until further studies can be done.

Glucosamine by itself has been associated with decreased pain, inflammation, and range of motion when compared with a placebo in human trials. It has been shown in one study to be as effective as ibuprofen (Motrin) in people with arthritic changes. Lab studies have shown increased joint production of protective GAG’s in tissues treated with glucosamine. It is likely that this product provides the most benefit in the concoction of oral joint supplementation since there is confusion over how well GAG’s by themselves are absorbed through intestinal linings.

Intraarticular Corticosteroids

This class of drug gained much fame, or infamy, as it is commonly used in racehorses with arthritis and has been blamed for many injuries post-injection. Research has proven that used correctly, these are necessary medications in the pathogenesis of joint disease. As we mentioned earlier, enzymes that are produced by diseased or inflamed joints are very destructive to normal

cartilage.

Joints that are inflamed must be treated with anti-inflammatory medication, as well as HA in some instances, to allow them to secrete normal joint fluid. Intraarticular corticosteroids allow the joint to start producing lubricating HA as inflamed joint tissues WILL NOT make thick, lubricating HA. It was once said that a “human on corticosteroids can walk to the autopsy room” but now most orthopedic surgeons use these products in the most famous athletes in the world. Horses are, by far, much harder on their joints than any human athlete. It only makes sense.

Substantiation for a direct link between corticosteroid administration and arthritis has persistently been unable to prove by dozens of investigators...Most of the problems associated are attributed to poor technique (infection), and poor selection of corticosteroid products.

Nonsteroidal Medication (NSAID's)

Phenylbutazone (Bute), flunixin meglumine (Banamine), and ketoprofen (Ketofen) are the most common NSAID's used in horses while aspirin and ibuprofen are the most commonly used NSAID's in humans. These are very effective in eliminating discomfort and are usually the first line of therapy in minor musculoskeletal pain. There is little evidence on how they affect actual joint environments and have as their most common and severe side-effect gastrointestinal ulceration and reductions in kidney perfusion...Ulcer formation is becoming more recognized as a common occurrence in all breeds of horses.

Conclusion

My desire through all of these articles has been to take a lot of the mystery out of veterinary medicine in a well-informed-owner approach. Your veterinarian will encourage intelligent questions. Do your own research. Take responsibility for the care of your athletic horse. We, as humans, have a lot to offer the athletic equine with therapy and medication that has been borrowed from the human medicine field, which has been designed specifically for use on the horse...

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