Management and Rehabilitation of Joint Disease in Sport Horses

Erin K. Contino, MS, DVM

KEYWORDS

• Sport horse • Joint disease • Osteoarthritis • Joint therapy • Physical therapy
• Rehabilitation

KEY POINTS

- Successful management of joint disease often requires a multimodal approach consisting of systemic medications and supplements, traditional or biologic intra-articular therapies, physical therapy, and management considerations.
- An accurate diagnosis is critical in the successful management of joint disease because it allows for the most appropriate targeted treatments to be selected.
- There are multiple nonmusculoskeletal factors that influence treatment selection, including endocrine status, history of gastrointestinal ulceration or kidney dysfunction, rules of the sports governing body, and various owner factors, such as expectations and finances.

INTRODUCTION

The successful treatment of joint disease in sport horses requires an accurate diagnosis, an honest evaluation of the treatment goals, and a clear understanding of an owner's expectations. Joint disease is a broad statement and attempts should be made to deduce which of the joint components are contributing to the joint disease so that the most appropriate treatment(s) can be pursued. Additionally, the entire horse should be evaluated, not only from a musculoskeletal standpoint but also to detect systemic disorders or concerns that may influence treatment choices.

MANAGEMENT CONSIDERATIONS

It is well understood in humans and dogs the negative effects of body weight on osteoarthritis (OA). In humans, every pound of body weight lost results in a 4-lb decrease in

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Department of Clinical Sciences, Colorado State University, 300 West Drake, Fort Collins, CO 80523, USA
E-mail address: erin.contino@colostate.edu

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forces on the knee.[1] Dogs with hip OA have less lameness after an 11% to 18% decrease in weight,[2] and a landmark study demonstrated longer life spans and delayed onset of chronic disease in dogs fed a restricted diet.[3] Similar benefits would be expected in horses so it is interesting that the role of weight is so commonly overlooked. Recommending weight loss in a clearly overweight horse seems appropriate.

Housing and environment also play a role in managing joint disease. Like humans, horses with OA, particularly of the axial skeleton or multiple limbs, tend to be stiff and to warm up slowly, particularly in cold weather and/or after stall confinement. Therefore, providing adequate shelter from the elements and means to stay warm and allowing regular access to turnout are beneficial. In particular, older horses do better with regular, consistent exercise compared with infrequent intense exercise. Fortunately, most sport horses are kept in routine work, which may be an effective, although unintentional, management strategy.

SYSTEMIC TREATMENTS

Nonsteroidal Anti-inflammatory Drugs

Nonsteroidal anti-inflammatory drugs (NSAIDs) are a mainstay of pain management for horses with joint disease due to their efficacy, availability, and ease of administration. The most commonly used NSAIDs include phenylbutazone, flunixin meglumine, and firocoxib; a topical NSAID is also available (**Table 1**). Nonspecific cyclooxygenase (COX) inhibitors, such as phenylbutazone, can cause gastrointestinal (GI) ulceration and kidney disease in a dose-dependent fashion. In an otherwise healthy horse, without history of GI or kidney disease, phenylbutazone is still a reasonable first line of defense.

Firocoxib is a newer COX-2 selective NSAID that spares the protective effects of the COX-1 pathway. At the labeled dose, firocoxib is fairly safe, even for long-term administration, but adverse effects can be seen when administered in excess and/or when combined with another NSAID.[4] Multiple studies have shown firocoxib to be effective in reducing naturally occurring lameness,[5,6] with similar efficacy to phenylbutazone for decreasing lameness.[7] Clinically, phenylbutazone seems more potent, so in cases of acute and/or moderate to severe lameness, the author prefers phenylbutazone for short-term and firocoxib for long-term administration. Because firocoxib takes several days to reach steady state, a loading dose should be given on the first day followed by the label dose each day thereafter.

Injectable Joint Products

The use of injectable products, such as Legend (sodium hyaluronate [HA], Bayer Healthcare LLC, Shawnee Mission, KS, USA), Adequan (polysulfated glycosaminoglycan [PSGAG], Luitpold Animal Health, Shirley, NY, USA), and Pentosan EQ (pentosan polysulfate sodium [PPS], Ceva Animal Health, Glenorie, New South Wales, Australia) are widespread. In a survey of 831 equine practitioners, 63% reported using Legend and 57% reported using Adequan.[8] These products, and many others, have been tested in the equine carpal chip model at Colorado State University Orthopaedic Research Center. Briefly, this model entails surgical creation of an osteochondral fragment off the distal aspect of the radiocarpal bone. Two weeks later, treatment is initiated and horses begin treadmill exercise to induce OA of the middle carpal joint. At the end of the study (day 70) various clinical, gross, and histopathologic outcomes are measured.

Using this model, intravenous (IV) HA (40 mg once weekly for 3 weeks) resulted in significantly less lameness (grade 1 vs grade 1.75 of 5), less synovial fluid inflammation, and improved synovial membrane scores.[9] These results indicate that injectable HA is both a symptom-modifying and disease-modifying OA drug, making it a