AN UPDATE ON EQUINE LAMENESS

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Categories : Vets

Date : May 21, 2012

provides his thoughts on using corticosteroids, and looks at the pros and cons of the various ways such treatments can be implemented

THE intra-articular use of corticosteroids has always been controversial.

Their use was first reported for treating joint disease in horses in 1955, and by 1968 there were reports of potential deleterious effects following corticosteroid intra-articular therapy. Since then, there has been continuing debate relating to the benefit and harm potentially caused by using these drugs in joints.

The action of corticosteroids is exerted through steroid-specific receptors in the cytoplasm of steroid-responsive tissues. This interaction results in the altered transcription of genes, leading to a wide variety of antiinflammatory effects, as well as other effects on the biology of articular cells that are of variable benefit. Corticosteroids are able to suppress inflammation at virtually all levels.

The humeral effects of corticosteroids are due to the inhibition of phospholipase A and the decrease in production of pro-inflammatory mediators by both the cyclooxygenase and lipoxygenase pathways. They also inhibit many of the other inflammatory effects, such as capillary dilation, migration of inflammatory cells and the production and release of degradative enzymes; however, such drugs may have a negative effect on the joint environment, as they can cause suppression of cartilage matrix synthesis, as well as, in rare cases, widespread joint mineralisation[1,2].

Numerous corticosteroids can potentially be used for intraarticular therapy. Betamethasone, as a

combination of 12mg betamethasone acetate and 3.9mg betamethasone sodium phosphate per millilitre, is rarely used for this purpose in the UK, although it has been argued that it may be an appropriate drug at a dose of 3mg to 18mg per joint due to its short duration of action[3].

Triamcinolone acetonide (at a dose of 6mg per joint to 18mg per joint) is a commonly used moderate to long-acting corticosteroid. Experimental data have indicated this corticosteroid both improved lameness and improved articular cartilage morphological parameters in comparison to control animals in a relatively aggressive experimental model of osteoarthritis (OA) in horses[4]. This study concluded that intra-articular administration of triamcinolone acetonide improved lameness, had some chondroprotective effects and no substantial detrimental effect on the joint. This corticosteroid is widely used in joint disease therapy, especially in managing diseases affecting high motion joints, such as the carpus, fetlock and distal interphalangeal (DIP) joints.

The author would normally advise such treatment as a one-off therapy, although in competitive horses, such as in the racing industry, it is common for such treatments to be repeated on a relatively regular basis in the face of clinical signs of joint disease.

As always with corticosteroid therapy, it is important to treat the primary cause of the joint disease. If there is an obvious primary lameness cause, for instance, a chip fracture of the fetlock or knee joint, or foot imbalance associated with DIP joint disease, steroid therapy may cause a temporary improvement in the clinical signs associated with the disease. However, it is likely the clinical signs will recur fairly quickly. Furthermore, there is also likely to be a progression in the OA disease process despite therapy. Thus, it is important to rule out any obviously treatable primary causes of lameness prior to treatment with corticosteroids.

Longer acting

Methylprednisolone acetate (20mg/joint to 40mg/joint) is commonly used in the UK and is longer acting compared to triamcinolone acetonide.

Clinically, this drug has been shown to improve the microscopic appearance of the synovial membrane and the synovial fluid parameters. However, in experimental OA models clinical improvement is not as marked and it may have a more detrimental effect on the articular cartilage. As such the author predominantly uses this drug as a treatment for OA of low-motion joints such as the small tarsal joints and the proximal interphalangeal joints (generally at a dose of 20mg/joint). In some cases, treatment would be repeated in four to eight weeks if only a partial response is observed, or even several months later if lameness returns[5,6].

Using corticosteroids as a treatment for joint disease has been controversial due to concerns of side effects associated with accelerated joint degeneration because of the possible negative effects on cartilage matrix. However, experimental data and their widespread clinical use over the past few decades now indicate that, in many instances, intra-articular therapy with corticosteroids can be

beneficial in cases where there is synovial inflammation as a key finding[4].

As a result of this, probably the most common indication for corticosteroids is in the therapy of synovitis, especially in competition horses, where there is a requirement for a rapid resolution of symptoms and return to training. As corticosteroids are potent antiinflammatories, such therapy can lead to a rapid resolution of the clinical signs, including improvement in lameness and resolution of any effusion. The inflammatory mediators present within the synovial cavity can lead to osteoarthritis – therefore, dampening down this inflammatory response can be beneficial for the joint's longterm health. In high motion joints, such as the carpus or fetlock, corticosteroids are commonly administered in conjunction with hyaluronan (HA)[1]. While this combination is widely used in equine practice, and is often considered to be a rational approach – since HA may have some beneficial effect on the cartilage – there are no corresponding in-vivo studies to support this use.

Recently, corticosteroids have been used as a therapy for osseous cyst-like lesions in the horse. The technique has been reported in cyst-like lesions of the medial femoral condyle in the horse[7], but the technique is applicable for cysts occurring at other locations. The technique usually involves arthroscopic assessment of the intra-articular cloaca of the cysts, and some local debridement of abnormal cartilage, which may be associated with the cyst. A spinal needle is then placed into the cyst, and 20mg to 40mg methylprednisolone acetate is injected at multiple locations within the cyst. In certain cases, this technique can be appropriate for standing treatment under ultrasound guidance. Results are similar to that seen with other surgical treatments of osseous cysts, like lesions in the horse, with one report identifying a success rate of 67 per cent. This is identical to those treated in previous studies with arthroscopic debridement. In my hands, this is the first-line treatment I use for such cysts.

In recent years, there has been a growing practice in some countries, often due to demand by owners and trainers, for "routine maintenance" (or prophylactic) injection of corticosteroids into joints of apparently sound horses that are perceived to be at risk. Such therapy is given as a routine measure, every three, six or 12 months, into specific joints. This practice, while becoming increasingly prevalent in the US, is almost unheard of in Europe and, fortunately, still rare in the UK. The rationale for this approach is uncertain, and it is hard to support such a practice when corticosteroids may have both detrimental and positive actions. Currently, no evidence suggests the practice has any effect on improving future soundness or working longevity in horses. It is hoped this does not extend further into normal veterinary practice in the UK.

The decision of when to return horses to exercise following corticosteroid therapy is unclear, with some clinicians recommending a conservative approach, as these drugs can affect cartilage metabolism in both normal and abnormal joints for periods of between four and eight weeks[1]. Thus, a total period of rest and slow return to exercise may be recommended for approximately 14 days, although others have returned horses more quickly to work without detrimental effects. Frequently, owner/ trainer demands require a much more rapid return to work than what is probably most

beneficial for the health of the joint and the longevity of the horse.

No quality data is available relating to the influence of rest and exercise in the post-treatment period on steroid efficacy and joint health. It has been suggested that restricted joint movement may be beneficial subsequent to treatment and lead to reduced clearance of the drug and enhanced penetration of intra-articular tissues[1].

It must be remembered that many racing and competition jurisdictions consider intra-articular corticosteroids as banned substances in competition (http://rules.britishhorseracing.com/ Orders-and-rules&staticID= 126863&depth=3). The situation is complicated as the drug detection time and drug withdrawal time for corticosteroids (such as triamcinolone acetonide) are undoubtedly variable and often longer than the commonly stated period of 10 days historically used by veterinarians[8].

Many racing and other competition jurisdictions are putting effort into testing during competition to identify illegally medicated horses.

Side effects of corticosteroid use include iatrogenic synovial sepsis and laminitis – both can be extremely serious and possibly fatal. To decrease the possibility of sepsis, some veterinary surgeons inject an intra-articular antibiotic, for instance gentamicin (125mg) or amikacin sulphate (125mg), at the time of corticosteroid administration. This is something I have never done and advise it is not necessary when using proper antiseptic technique.

No scientific studies have proved a causal link between the use of intra-articular corticosteroids and laminitis, although there have been anecdotal reports to the contrary[9]. These reports suggest a narrower therapeutic index with triamcinolone acetonide with respect to laminitis as a complication.

Certainly in the UK, it is probably now normal veterinary practice to warn an owner of the risk of corticosteroid– induced laminitis when treating a horse with corticosteroids[10],[11]. The risk is probably greatest in heavyweight or overweight horses, which may be predisposed to equine metabolic syndrome. Furthermore, unsurprisingly, in my personal experience the risk is probably greatest in horses receiving high doses of corticosteroid, in which multiple joints are being treated.

Corticosteroids are among the most commonly used drugs for articular medication in horses, and when used in the correct manner are an extremely useful therapy. However, it also has to be considered that these drugs have powerful side effects, and their use has to be balanced and appropriate. Understanding their pharmacology and mode of action in joint diseases is key to their appropriate use.

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