Osteoarthritis of the centrodistal and tarsometatarsal joints is a common cause of hindlimb lameness and diagnosis is generally straightforward. However, the clinical and radiological manifestations of the disease vary considerably between horses, as does the response to treatment. Generally horses can be divided into 3 categories: those that respond to intra-articular analgesia of either the centrodistal or tarsometatarsal joints or both, but with no detectable radiological abnormality on 4 standard radiographic projections; horses with predominantly periarticular osteophyte formation; and horses with joint space narrowing, subchondral bone lysis and sclerosis. These 3 manifestations are not necessarily a continuum, and in fact horse in the third group may have a sudden onset of lameness despite obvious preexisting radiological change. Some horses with no radiological abnormalities at the time of onset of lameness never develop any abnormality and the cause of pain and lameness remains an enigma. However, recent post mortem work using magnetic resonance imaging has demonstrated the presence of a variety of pathological abnormalities which have not been detectable radiographically, including intraosseous ligament pathology, and defects in articular cartilage and subchondral bone [1].

Accurate interpretation of radiological abnormalities is crucial because this influences useful treatment options. Some horses with no radiological abnormality respond extremely well to intra-articular medication, whereas others show a negligible response. Horses with periarticular osteophyte formation often respond well to intra-articular medication, although periodic retreatment is generally poor. Concurrent treatment of the cunuean bursa sometimes results in an enhanced response. However, extensive osteophyte formation may make joint access difficult and in some cases impossible. Horses with extensive lytic changes usually respond extremely poorly to intra-articular medication and if there is marked loss of joint space intra-articular medication is not possible.

The aim of this discussion is to focus principally on the management options for those horses that do not respond to traditional intra-articular therapies.

Conservative Treatment
In my experience rest is of limited value; although lameness may improve it invariably recurs when work is resumed. Palliative management with phenylbutazone is adequate in some non-competition horses but I have never seen the development of complete fusion of the centrodistal and tarsometatarsal joints, despite having the opportunity to serially re-examine over many years approximately 10 horses managed in this way.

A variety of drugs can be used for intra-articular medication including corticosteroids (methylprednisolone acetate, triamcinolone, betamethasone) alone or in combination with hyaluronan; polysulphated glycosaminoglycans (PSGAG); pentosan polysulphate. These can be used alone or in combination with systemically administered so-called chondroprotective agents such as polysulphated glycosaminoglycans or pentosan polysulphate or oral nutraceuticals. Despite the widespread use of these drugs there have been no long term studies comparing their efficacy. The repeated intra-articular use of corticosteroids does not appear to promote progression of degenerative change.

Tiludronate is a biphosphonate compound currently not licensed for use in the United Kingdom. Its theoretical mode of action is to inhibit osteoclastis. A small double blind clinical trial has been carried out at the Animal Health Trust using either a placebo or tiludronate administered as a single intravenous infusion. Horses were examined at 30 and 60 days after treatment. Horses which still exhibited lameness at 60 days were then treated with tiludronate and re-examined after a further 60 days. Work in the interim was governed by the degree of lameness. For inclusion in the trial all horses had to either show resolution of lameness after intra-articular analgesia of the centrodistal and or tarsometatarsal joints, or to have radiographic...
abnormalities compatible with osteoarthritis and respond to perineural analgesia of the tibial and fibular nerves after exclusion of pain distal to the hock. Eight horses were included in the trial, one with no detectable radiological abnormality, 1 with narrowing of the tarsometatarsal joint alone and the remainder with extensive joint space narrowing and subchondral lysis and sclerosis. All horses had focal increased radiopharmaceutical uptake in the central or third tarsal bones or proximal aspect of the third metatarsal bone. All horses had previously failed to respond adequately to other treatments. No horse responded over the first 60 days and all were then treated for the first time or retreated with tiludronate. Significant improvement in lameness was seen in only 1 horse, that with narrowing of the tarsometatarsal joint space.

Shockwave Treatment
The use of extracorporeal shockwave treatment was described by McCarroll and McClure [2] in 2000. Horses were treated under general anaesthesia and received 2000 pulses at 22 kV. Fifty-nine of 74 horses (80%) showed improvement in lameness of at least 1 grade 90 days after treatment, but only 13 (18%) were sound. The relationship between severity of radiological abnormality and response to treatment was not assessed.

Surgical Management
A variety of surgical techniques for treatment of osteoarthritis of the distal hocks joints have been described, including subchondral forage, surgical arthrodesis and neurectomy. Early reports of surgical arthrodesis were based on removal of > 60% of the articular cartilage. Convalescent time was prolonged (9 to 12 months) and horses often experienced long periods of postoperative pain and reported success being between 60% and 70% of treated horses. Most reports focused on general purpose horses and the relationship between severity of radiological abnormality and outcome was not assessed.

Recently the results of using a 3 drill tract technique have been reported [3]. Only the lame limb(s) was treated, but both the centrodiscal and tarsometatarsal joints were drilled under varying degrees of radiographic control using a 3.2 mm, 4.0 mm or 4.5 mm diameter drill bit. Horses followed a controlled exercise programme post operatively with a view to resumption of full work after one year. Thirty-two of 59 horses (59%) were able to return to former athletic function and a further 6 (11%) were improved. There was a non-significant trend that horses with the most severe radiological grade responded least well. An unspecified number of treated horses had osteoarthriti of the talarcalcaneo-centroquartal (proximal intertarsal) joint preoperatively and all remained lame. Three of 15 horses reexamined radiographically between 3 months and 4 years post operatively developed radiographic evidence of osteoarthritis, but this did not appear to influence outcome.

No other long term problems were documented. However previous studies and personal experience indicates that a proportion of apparently successfully treated horses develop recurrent lameness at a variable time post operatively either due to osteoarthritis of the talarcalcaneo-centroquartal joint or due to fracture of the central or third tarsal bone.

Surgical arthrodesis is the most realistic treatment option for horses with advanced joint space narrowing and subchondral lysis, but in my experience in competition horses the results are often disappointing.

Chemical Arthrodesis with Sodium Monoiodoacetate (MIA)
Chemical arthrodesis is only a treatment option if it is possible to inject the centrodiscal and tarsometatarsal joints. Bohanon [4] recorded a 75% success rate 13 to 51 months after treatment in 39 horses following treatment of both the centrodiscal and tarsometatarsal joints with 100 mg of MIA in 2 ml 0.9% saline. Only the lame limb was treated. Recently the results of treatment of 104 horses were reported [5]. All were treated bilaterally even if unilaterally lame. Twenty-nine of 34 horses (85%) were sound 24 months after treatment. It took up to 12 months for radiographic fusion to develop Complications included septic arthritis in 4 horses, skin sloughing, and persistent periarticular soft tissue swelling, as has been previously described. No horse developed osteoarthritis of the talarcalcaneo-centroquartal joint. Contrary to previous reports and my personal experience post operative pain was readily controlled by sedation using detomidine and butorphanol.

Twenty-five horses have been treated at the Animal Health Trust with a minimum of 2 years follow up [6]. Both limbs were treated if horses had bilateral radiological abnormalities. Horses were pretreated with phenylbutazone. Two hours after treatment perineural analgesia of the tibial and fibular nerves was performed using bupivacaine, since this in combination with sedation with detomidine and butorphanol was found to be the most effective pain management regime for the predictable increase in pain 3 to 8 hours after treatment. In horses with a markedly narrowed joint space injection of the centrodiscal joint was more easily performed with the horse recumbent under general anesthesia than if standing, sedated. Horses entered a controlled work programme immediately after treatment and most were back in moderate work by 6 months after treatment, although in common with previous reports a variable degree of lameness was often present for up to 9 to 12
months. Twenty-one of 25 (84%) horse are in full athletic function 2 - 7 years after treatment. Four horses developed fusion of the talocalcaneal-centroquartal joint, although no communication with this joint had been detected using a pre-treatment positive radiographic contrast study. Three horses subsequently developed mild lameness associated with osteoarthritis of the talocalcaneal-centroquartal joint after resumption of full work. One horse fractured the third tarsal bone 8 months after treatment.

References


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