MANAGEMENT OF THOROUGHBRED RACEHORSES DIAGNOSED WITH PALMAR OSTEOCHONDRAL DISEASE VIA MAGNETIC RESONANCE IMAGING.

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Key Points

• Palmar osteochondral disease is a performance limiting condition affecting Thoroughbred racehorses that is readily diagnosed on low-field MRI examination.
• Treatment includes rest, intra-articular therapy and adjunctive therapies such as administration of a bisphosphonate.
• Horses have a fair prognosis for return to racing after a period of rest and rehabilitation.

Palmar/plantar osteochondral disease (POD) is a degenerative condition of the distal condyles of the third metacarpus/tarsus (McIII/MtIII) that results in varying degrees of pathology affecting the articular cartilage and underlying subchondral bone. It has been identified by other names for many years, although it has recently attracted greater interest as its high prevalence in populations of racehorses globally has been increasingly recognized.1-2 Severity of POD varies, which is assumed to reflect the progressive nature of the disease.3 In the early stages there is minimal disruption to the articular surface of the joint. However, in more advanced POD the disease is associated with collapse or ulceration of the mineralised articular surface and rapidly leads to generalised joint disease, which is irreversible in nature.4 Horses develop POD due to repetitive overload trauma during high intensity exercise and is seen more commonly in racing Thoroughbreds and Standardbreds. This study evaluated horses with POD affecting the distal metacarpal condyles and thus nomenclature will reflect forelimb POD.

Horses with POD display varying degrees of lameness and can present with a shuffly, stilted action where the condition exists bilaterally or even quadrilaterally. The results of intra-articular analgesia can be variable although perineural analgesia of the palmar metacarpal nerves is typically positive and may result in contralateral limb lameness. Radiography is routinely used to assess metacarpophalangeal joint (McPJ) disease although this modality is relatively insensitive in the detection of POD.5-6 Radiographic projections have been developed to highlight specific areas of the McPJ commonly associated with this disease, such as the flexed dorso-palmar views to skyline the palmar aspect of the distal condyles of McIII and elevated oblique views, to separate the subchondral bone of the palmar condyles of McIII from superimposed mineralised structures.7 Magnetic resonance imaging allows the detection of subtle subchondral bone abnormalities before they are evident on radiographs.8 Low-field MRI of the distal limbs has become popular in a clinical setting as it is relatively cost efficient, it can be done in the standing patient and may be performed earlier in the disease process because of its availability.

There are approximately 1200 Thoroughbred racehorses in training in Hong Kong. Detailed computerized records held by the Hong Kong Jockey Club are part of an official Veterinary Management Information System. All aspects of racing and training are strictly regulated and recorded on this site, and clinicians have a responsibility to document all significant clinical findings and all medications administered or prescribed promptly into the Veterinary Management Information System.3 For this reason, there is a unique population of racing Thoroughbreds in a controlled environment with complete records from the time that they undergo a pre-purchase veterinary examination in their country of origin, until the time that they retire from racing.
In a 3 year period, forty-seven Thoroughbred racehorses were diagnosed with POD using standing, low-field MRI (sMRI). Lameness was typically chronic and ranged from grade 1/5 to 3/5. Lameness was localized to the distal metacarpus and McPJ region in 62% horses. Radiographs were unremarkable in 55% of horses and a diagnosis of POD was made on radiographs in only 21% of horses. Magnetic resonance sequences obtained included T1W 3D and T1 and T2*-weighted GRE and STIR FSE scans in sagittal, frontal and transverse planes. The most common findings were focal hyperintensity at the articular margin of the affected condyle on T1, T2* and STIR sequences surrounded by a region of subchondral hypointensity (bone mineral densification), which is consistent with previous reports.8

**Figure 1:** T1W sagittal image of the distal metacarpus of a horse with POD showing signal hyperintensity at the articular margin with surrounding subchondral signal hypointensity.

Horses were rested for an average of 12 weeks and 24/47 horses were administered intra-articular corticosteroids and hyaluronic acid (triamcinolone acetate and HA) with or without the systemic administration of tiludronate, a bisphosphonate which was prescribed in 17/47 horses to reduce the degree of bone resorption while the horse was not in training. Fifty-three per cent of horses successfully returned to training and raced at least 3 times. Intra-articular administration of corticosteroids was associated with an increased chance of racing again while the administration of Tiludronate was associated with a lower chance of racing compared to horses in which it was not administered.

Thoroughbred racehorses with POD diagnosed using sMRI have a fair prognosis to return to racing which may be improved with the administration of intra-articular corticosteroids. In this population of horses, systemic tiludronate did not positively influence racing outcome, however use of bisphosphonates deserves to be further investigated as it is likely to play a role in the management of this condition.

**References**


