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MRI for soft tissue lesions in the distal limb

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Magnetic resonance imaging (MRI) has revolutionised the diagnosis of many conditions of the equine distal limb, particularly in cases of foot lameness (Gavin 2011). Studies using medium- or high-field magnets in anaesthetised horses and low-field magnets in standing horses have produced a wealth of information about abnormalities that can affect lame horses with pain localised to the foot (Dyson and Murray 2007; Sampson et al. 2009). MRI provides superior diagnostic capabilities compared to other imaging modalities for many osseous and soft tissue lesions of the foot. Although there are differences between the images, both high- and low-field scanners produce images with comparable diagnostic capabilities (Schramme et al. 2005; Murray et al. 2009).

Soft tissue structures of the foot that are commonly damaged in lame horses include the deep digital flexor tendon (DDFT), collateral ligaments of the distal interphalangeal (DIP) joint, navicular bursa, collateral sesamoidean ligaments (suspensory ligaments of the navicular bone), distal sesamoidean impar ligament, and the distal digital annular ligament. Concomitant damage to several structures (both osseous and soft tissue) is commonly recognised. A recent analysis of the results of MRI evaluation of 205 horses with foot pain examined at the author’s hospital revealed that 90.7% of cases had clinically significant MRI lesions within one or more of 3 structures: the DDFT, navicular bone or collateral ligaments of the DIP joint (J. Dixon 2010, unpublished observations).

Although injuries of the distal portion of the DDFT had been recognised for many years, it was only after the clinical application of MRI in the evaluation of foot pain that the true incidence of this disease was recognised (Dyson et al. 2003). Since then there have been several studies with both high- and low-field MRI that have shown that this is a common cause of lameness (Mair et al. 2003; Mair and Kinns 2005; Mitchell et al. 2006; Dyson and Murray 2007; Sampson et al. 2009). Overall, abnormalities of the DDFT were the most commonly observed lesions in horses with foot pain undergoing MRI, with a total incidence ranging from 30–64% of horses examined. Several different types of DDFT lesions are recognised, including core lesions, dorsal tears, parasagittal splits and insertional lesions. Generally, the prognosis for athletic use is guarded for horses with these lesions (Gutierrez-Nibeyro et al. 2010), but advances in treatments, including surgical debridement of dorsal lesions within the proximal pouch of the navicular bursa (Smith et al. 2007) and stem cell/biological agent therapies, may generate improved outcomes.

Desmists of the collateral ligaments of the DIP joint had also been recognised as a clinical entity prior to the use of MRI in the evaluation of foot pain, but subsequent to the widespread use of this modality the true incidence of this disease became apparent (Dyson et al. 2004, 2008; Gutierrez-Nibeyro et al. 2009). Associated osseous abnormalities at the site of insertion of the collateral ligaments onto the distal phalanx may be present (Dakin et al. 2009; Sherlock and Mair 2011).

References


