

MAGNETIC RESONANCE IMAGING OF THE EQUINE LIMB

Dr Jennifer Fowlie, Moore Equine

Photo Credit Dr Fowlie



Magnetic resonance imaging (MRI) has given veterinarians an unprecedented ability to look inside the equine limb, and allows us to better determine the diagnosis, prognosis and treatment for equine lameness conditions. MRI allows us to view a region of the limb in slices in multiple orientations, and gives us images showing the soft tissue and bone structures in exquisite detail.

The Hallmarq MRI is used to take images of a standing sedated horse's limbs up to the hock/carpus. There are larger units that can image further up the limb and the head/neck, however the horse needs to be placed under a general anesthetic for these units. There are still no MRI systems available that can evaluate a full grown horse's chest or abdomen.

The use of MRI to evaluate the equine foot has been an exciting advancement. Previously if a lameness was localized to the foot and the radiographs of the region was normal, the conclusion that veterinarians would come to is that there must be a soft tissue (i.e. ligament or tendon) abnormality or injury in the region. Generally veterinarians reach for ultrasound to evaluate the soft tissues in a region, however the hoof capsule does not allow for diagnostic imaging of the soft tissue structures within the foot. Completing

an MRI on the equine foot allows us to determine the structures involved and the degree of injury so we can better predict the prognosis for recovery and best treatment options. MRI of the foot following a nail penetration to the foot is also very helpful to determine the extent of damage to structures within the foot.

Interestingly, the MRI is able to pick up bone abnormalities that appear normal on radiographs. Abnormalities can be seen for example in the navicular bone or condyles of the cannon bones that indicate that there is bone injury/contusion or degeneration of the bone, where the radiographs had appeared normal. Without MR imaging it would not be possible to make these diagnoses.

Your veterinarian may recommend an MRI for your horse when the lameness has been localized to a specific region, but x-rays and ultrasound of the region are normal, or if ultrasound is not possible, i.e. the foot. Imaging of a region (ie foot or fetlock etc.) takes a couple hours, as many different series are taken at different orientations, thus generally only one or two regions can be imaged at one time. A common misconception is that MRI can be used to scan an entire limb looking for the source of lameness, which is not the case. Images of the opposite limb will always be taken for comparison.

New treatment options, such as scoping the navicular bursa, bisphosphonate therapies and directed injection of regenerative therapies have been some of the treatment options that have been indicated from MRI results, which may not have been recognized as treatment options prior to the availability of MRI. MRI is truly opening our eyes to a deeper understanding the equine limb.