

3UREFHGXUH,IRUPDWR□

Magnetic resonance imaging has been used medically for over 20 years and is just now becoming available to veterinarians in major metropolitan areas. The patient is placed in a strong magnetic field parallel along the long axis of the permanent magnetic field. Images are created then by using radio pulses to excite the spinning of protons within the magnetic field and then by analyzing the resulting signal. These radio pulses are transmitted and/or received by coils that are placed over the area of anatomy that we are interested in imaging. The science and technology behind the creation of images acquired by magnetic resonance imaging are fascinating, but beyond the scope of this discussion.

Animal Imaging is the only private practice in Texas with a Siemens Verio 3.0 Tesla MRI system. Magnets commonly used in human medicine or veterinary medicine range from 0.2-3.0T strengths. Given the sensitivity to motion and the length and time it takes to acquire the study, all patients at Animal Imaging are anesthetized. Equine patients are anesthetized with Sevoflurane. Both monitoring and anesthesia equipment must be MRI compliant, which means they must not have any ferrous component that would be affected by the magnetic field.

In the equine, typical study imaging sequence may be up to 30-35 minutes for a given area of anatomy. Typically, the region of interest has been localized by the referring veterinarian or the staff at Animal Imaging to ensure that the area imaged is the source of the pain in the horse. We are limited to imaging the hock, carpus and below as well as the equine head in regard to areas of anatomy that can be imaged. Stifles can be imaged on smaller patients. Contact Animal Imaging to see if your patient's stifle can be imaged. This is largely due to the size of the bore of the magnet, which restricts any other areas of anatomy from being imaged. All equine patients are examined prior to the MRI to better understand the region that may need to be imaged. Horses that have multiple sites of lameness can have more than one site imaged under one anesthetic session with careful direction from the attending veterinarian. We try to limit anesthesia time to no more than 1 ½ hours.

The multiple imaging sequences used at Animal Imaging all offer different insights into anatomy based on the physics of the sequence selected. Sequences performed on the equine include: proton density, T2 studies in axial planes, stir sequences fat suppressed images in both sagittal and axial, vibe, space, dorsal and sagittal gradient sequences. Gadolinium contrast is occasionally used for imaging equine brains and/or some soft tissue structures in the lower limb where contrast enhancement can be beneficial in the final diagnosis. In a typical bilateral foot study, there may be up to several hundred images that will be evaluated. Every effort is made based on the history and our own clinical exam to better understand the clinical significance of the multiple findings that may be described. Treatment

is then often directed back to the referring veterinarian. If requested by the referring veterinarian, various treatment options can be performed at Animal Imaging.

Indications for MRI in the equine often involve better definition of possible pathologies in the foot, ankle, fetlock or hocks that are localized with regional anesthesia to one of the above mentioned regions without any obvious indication of a cause of the soreness with routine radiology, clinical or ultrasound evaluations. As an example, the ability to find subtle lesion in the proximal suspensory in either front or hind limb is enhanced with MRI evaluation. Numerous soft tissue structures in the foot, such as the deep flexor tendon, impar ligament, the collateral suspensory ligament of the navicular, the collateral ligament of P3, etc. are better evaluated with MRI evaluation. Often there is a history of an inconsistent response to previous treatment plans. Other indications include penetrating foreign bodies of the foot, diagnosis of bone bruising or contusions in multiple areas of anatomy and/or partial or full thickness cartilage lesions in multiple joints. Confirmation of a potentially septic lesion may be indicated as well. MRI evaluation of the foot prior to a neurectomy is also often very beneficial in regards to determining if the horse is a good candidate for such a procedure. We also have the ability to evaluate the head and/or sinuses of the horse for many potential lesions, such as tumors, sinus cysts, infarcts, nerve sheath lesions, etc.

Scheduling an MRI Appointment:

We schedule Equine MRI's Monday thru Friday. We ask that the patient be dropped off the night before the appointment or by 7:30 am. the morning of. In most cases, our patients are ready to travel by 3:00pm the same day. If the return destination is over 4-5 hours away, we will keep our patients till the following day. Because general anesthesia is used for the MRI, we ask that you do not feed anything after midnight before the appointment. Water and medications are fine. We ask that you call the office between 11-12 the day of the MRI to check on the status of the patient and to set up a discharge time. At the discharge time, Dr. Hersman and/or Dr. Sharp will be able to go over preliminary results with you. The final results, including a typed report by Dr. Hersman and/or Dr. Sharp, and our on-site Equine radiologists, will be sent to you and your referring veterinarian within 24 hours of your visit. A CBC and a limited Chemistry panel will be required to evaluate the health of your horse prior to anesthesia. Please consult your referring veterinarian to perform the CBC and Chemistry or Animal Imaging can perform the blood work if so desired.

Magnetic resonance imaging has been a very exciting and clinically rewarding diagnostic aid used at Animal Imaging.

Please visit our website at www.animalimaging.net or call (972) 869-2180 if you have any further questions.