Characterization of Foot Lesions Using Contrast Enhanced Equine Orthopedic Magnetic Resonance Imaging

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Contrast enhanced magnetic resonance imaging (MRI) increases the detection of subtle lesions in the equine foot and provides information about the pathology of lesions not appreciated using routine MRI techniques. Authors’ address: Alamo Pintado Medical Center, 2501 Santa Barbara Avenue, Los Olivos, CA 93441; e-mail: carter@alamopintado.com © 2008 AAEP.

1. Introduction
The purpose of this project is to describe the magnetic resonance imaging (MRI) lesions identified in clinical cases using a single IV bolus dose of gadopentetate dimeglumine contrast agent.

2. Materials and Methods
This was a prospective clinical study of 24 horses undergoing routine MRI examination for forelimb foot lameness. At the end of the routine MRI examination of the foot, horses were administered 0.1 ml/kg of IV gadopentetate dimeglumine in a single bolus dose. A second set of T1-weighted fat-suppressed volume interpolated enhancement images in the axial and sagittal planes were obtained. Regions of interest from pre- and post-contrast images were captured from areas of MRI abnormalities and from normal regions of the limb. A relative ratio of enhancement was determined for both normal pre- and post-contrast images and for areas of pathology. Pre- and post-contrast regions of enhancement were compared for significant increases in contrast signal.

3. Results
Deep digital flexor tendon tears (p = 0.04), impar ligament desmitis (p = 0.02), collateral sesamoidean ligament desmitis (p = 0.04), and navicular bone flexor cortical margin erosions (p < 0.00) were the regions to significantly enhance. Navicular bursitis (p = 0.09) approached but did not reach statistical significance. Navicular bone medullary edema did not enhance significantly (p = 0.16).

4. Discussion
Contrast enhancement helps to identify subtle pathological lesions of the foot. This technique augments current protocols in use for MRI of the equine limb.