Comparison of Radiography, Nuclear Scintigraphy, and Magnetic Resonance Imaging for Diagnosing Specific Conditions of the Equine Distal Tarsal Bones

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The diagnosis of osseous hyperintensity (bone edema) and sclerosis of the distal tarsal bones can be challenging because radiographs have a low sensitivity for these conditions. Nuclear scintigraphy can help localize the pathology, but magnetic resonance imaging is superior to confirm diagnosis. Authors' address: Alamo Pintado Equine Medical Center, 2501 Santa Barbara Avenue, Los Olivos, California 93441; e-mail: adaniel@rvc.ac.uk (Daniel). © 2009 AAEP.

1. Introduction
The goal of this retrospective study was to critically analyze and compare radiography, nuclear scintigraphy, and magnetic resonance imaging (MRI) when imaging the distal tarsus and to describe the lesions found associated with them. We hypothesized that radiographs were not as sensitive for diagnosis of specific conditions of the third and central tarsal bones compared with nuclear scintigraphy and MRI.

2. Materials and Methods
A retrospective study over 2 yr involved 14 cases with unilateral hindlimb lameness. Radiography, nuclear scintigraphy, and MRI were performed on all cases included in the study, and the imaging findings were recorded from each modality.

3. Results
Radiographs were found to have low sensitivity when identifying lesions, because a high percentage of horses had normal/inconclusive radiographs despite pathologic changes identified with MRI. Nuclear scintigraphy findings correlated well with the location of lesions found with MRI in all horses in this study. MRI identified sclerosis of the distal tarsal bones in 12 of 14 cases and osseous hyperintensity in 5 of 14 of cases.

4. Discussion
The findings of the study confirm the hypothesis that radiographs were not sensitive for diagnosis
of distal tarsal bone pathology, especially sclerosis and osseous hyperintensity. Diagnosing these conditions of the distal tarsal bones was difficult when using only radiography and arguably requires all three imaging modalities described to both rule in and rule out pathology.