Humerus Stress Remodeling Locations Differ in Thoroughbreds Racing on Synthetic Versus Dirt Racetrack Surfaces

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Humeral stress remodeling location is different when comparing horses racing and working on synthetic versus dirt tracks in southern California. Authors' addresses: William R. Pritchard Veterinary Medical Teaching Hospital, (Dimock, Puchalski) and J.D. Wheat Veterinary Orthopedic Research Laboratory (Stover), School of Veterinary Medicine, University of California, 1 Shields Avenue, Davis, California 95616; PO Box 1128, Sierra Madre, California 91025 (Hoffman); Southern California Equine Foundation, PO Box 1728, Arcadia, California 91077-1728 (Klawitter); e-mail: andimock@gmail.com. © 2010 AAEP.

1. Introduction
Clinical observation indicated that the location of humeral stress remodeling changed with the change in racetrack surface from dirt to synthetic.

2. Materials and Methods
All 930 horses included in the study raced at California racetracks and presented for bone phase nuclear scintigraphy between September 1, 2005 and July 1, 2009. During the study period, all of the included tracks changed from dirt to synthetic. Scintigraphy images were made anonymous and reviewed by a blinded reviewer for the presence or absence of increased radiopharmaceutical uptake in the humeri. All lesions were graded mild, moderate, or severe, and the location was described as cranioproximal, caudoproximal, diaphyseal, craniodistal, or caudodistal. χ² or Fisher's exact test was used to examine the relationship between humeral lesions and track surface.

3. Results
Of 930 horses, 541 raced on synthetic surfaces and 389 on dirt surfaces. There was no difference in the incidence (p = 0.313) or severity (p = 0.932) of lesions. Lesion distribution (cranial, mid, or distal) was significantly different (p = 0.0004). Horses running on synthetic tracks had a greater proportion of lesions in the distal humerus, with the craniodistal cortex being most common.

4. Discussion
This study provides evidence that changing track surface has biological implications. Continued monitoring is necessary to determine whether this change is associated with a change in incidence or configuration of stress remodeling in other bones or catastrophic fractures.