



For Immediate Release

April 28, 2009

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Note: Photos are available at:

http://www.aaep.org/equine_research_co_group.htm

Research Needed to Better Understand Navicular Disease

On Behalf of the Equine Research Coordination Group

Navicular disease was first described 250 years ago, when it was called “coffin joint lameness” because the lameness came from inside the horse's hoof. Nearly a century later, the term “navicular joint disease” began to be used to describe the degenerative disease. Navicular affects the horse's navicular bone, the small bone in the back of the foot, as well as associated structures such as the coffin joint, the impar ligament, suspensory ligament of the navicular bone, the navicular bursa, and the deep flexor tendon.

First used to evaluate the navicular bone in the 1930s, radiographs provide important information about changes in the bone structure associated with the condition. In the 1970s, renewed interest in the investigation of navicular disease led many to believe it was actually a complex condition involving many tissues and not just the navicular bone. These conclusions led to the description of the lameness as navicular syndrome.

New technology and techniques have made it possible to visualize portions of soft tissue structures, but not until magnetic resonance imaging began to be used was the extent of these soft tissue injuries truly understood. As a result, a plethora of new information regarding injuries associated with navicular disease is now available, but the question that remains is what the new information means.

Navicular disease or navicular syndrome, which is more correctly termed palmar foot pain syndrome, accounts for one-third of all chronic forelimb lameness in horses. Why do these horses become lame? Some studies have shown that, at least for some of these animals, the interaction between the navicular bone, its bursa and deep flexor tendon creates a situation similar to osteoarthritis, except the degenerative process involves fibrocartilage on the back of the navicular bone and the adjacent flexor tendon.

Navicular disease is a degenerative disorder theoretically caused by excessive and sustained forces of compression at the distal one half of the bone. Abnormal forces from faulty conformation hypothetically cause biomechanical stresses on the navicular bone and cause remodeling changes. As long as the remodeling in response to these forces is slow, no problems occur. But when the biomechanical stresses exceed physiologic levels, degenerative disease in the fibrocartilage of the flexor surface causes changes in the underlying subchondral bone and bone marrow. Alterations in the bone lead to edema and subsequent venous hypertension and navicular bone-related pain.

Diagnosis of navicular disease is based on an overall evaluation of the hoof that includes: (1) response to diagnostic manipulative tests; (2) response of the lameness to diagnostic analgesia; (3) imaging of the foot; and (4) evaluation of hoof conformation. The diagnosis is made based on the clinical signs and may be corroborated by radiographic evaluation. However, radiographs alone do not diagnose the disease.

The first steps developing a logical approach to the treatment of this hoof lameness are an accurate assessment of the pain and careful evaluation of hoof structure that may predispose it to the condition or cause the pain. Treatment then should be based on the type of and location of the disease. Shoeing should be the basis of all treatment, and any medicinal or surgical therapy should be as an adjunct to shoeing.

To prevent navicular disease, consistent care from a farrier is necessary to keep the hoof in good condition and to address issues of imbalance as they arise. Hoof care is also the area that needs the most research. At this point, clinical evidence of the effects of trimming and shoeing on soundness are largely empirical or the result of trial and error.

To fully understand navicular disease and injury to all the structures involved, additional research is needed to investigate the effects of trimming on the growth of hoof capsule; the effects of shoeing on the growth and physiology of the hoof capsule; and how limb and hoof conformation is related to the biomechanics of the foot and navicular bone. Studies to define how footing and type of performance affect navicular-associated structures are also needed.

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The veterinary community needs your assistance to increase funding for research on navicular disease and other equine diseases. Please contact the American Association of Equine Practitioners Foundation (www.aaepfoundation.org), the American Quarter Horse Foundation (www.aqha.com/foundation), Grayson Jockey-Club Research Foundation (www.grayson-jockeyclub.org), Morris Animal Foundation (www.morrisanimalfoundation.org) or your favorite veterinary school or research institution to make a contribution towards equine research.

This is just one of the many efforts that the AAEP Foundation is coordinating on behalf of the industry through the Equine Research Coordination Group (ERCG), which is comprised of researchers and organizations that support equine research. Formally organized in 2006, the ERCG has a mission of advancing the health and welfare of horses by promoting the discovery and sharing of new knowledge, enhancing awareness of the need for targeted research, educating the public, expanding fundraising opportunities and facilitating cooperation among funding agencies.

The ERCG is a group comprised of researchers and organizations that support equine research. Participants in the ERCG include equine foundations and multiple university research representatives. Current participants include: AAEP Foundation, American Horse Council, AQHA Foundation, Grayson-Jockey Club Research Foundation, Morris Animal Foundation, Havemeyer Foundation, United States Equestrian Federation Foundation and university researchers: Warwick Arden, BVSc, DVCS, MS, PhD, Dipl. ACVS (North Carolina State University); Rick Arthur, DVM; Noah Cohen, VMD, MPH, PhD, Dipl. ACVIM (Texas A & M University); Gregory Ferraro, DVM (University of California-Davis); Eleanor Green, DVM, DACVIM, DAVBP (Texas A & M University); Joan Hendricks, VMD, PhD, Dipl. ACVIM (University of Pennsylvania); C. Wayne McIlwraith, BVSc, PhD, DSc, FRCVS, Dipl. ACVS (Colorado State University); James Moore, DVM, PhD, Dipl. ACVS (University of Georgia); Rustin Moore, DVM, PhD, Dipl. ACVS (The Ohio State University); Grant Rezabek, DVM, MPH (Oklahoma State University); Corinne Sweeney, DVM, Dipl. ACVIM (University of Pennsylvania); Mats Troedsson, DVM, PhD, Dipl. ACT (University of Kentucky - M.H. Gluck Equine Research Center); and Nathaniel White II, DVM, MS, Dipl. ACVS (Virginia-Maryland Regional College of Veterinary Medicine).

For more information on the ERCG or to view other topics and white papers, visit http://www.aaep.org/equine_research_co_group.htm.

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