Webinar Shares Info About Laminitis

"Any adult horse is potentially susceptible to laminitis," stated Dr. Rustin Moore, professor and chairperson of the Department of Veterinary Clinical Sciences at The Ohio State University (OSU) College of Veterinary Medicine, during a one-hour "Understanding Laminitis" webinar on May 23. Dr. Moore further noted that surveys show at least 15 percent of adult horses are afflicted with laminitis during their lifetime, and 75 percent of those will often develop chronic challenges.

At-risk horses, Dr. Moore stated, include systemically ill horses, heavy or obese horses, those that experience systemic inflammation involving the chest cavity, those that have a sudden change in diet, mare with retained placenta and horses with colic, diarrhea or colitis.

Using a series of illustrations, Dr. James Belknap, an associate professor of equine surgery at OSU who consults on laminitis cases and runs a research laboratory focusing on laminitis, verbally and graphically explained the digital anatomy of a horse's hoof. Dr. Belknap showed the structure of the equine foot, concentrating on how the attachment of two different types of laminae, the epidermal laminae (attached to the hoof wall) and the dermal laminae (attached to the distal phalanx/coffin bone), through a critical layer of connective tissue called the basement membrane, is critical for the support of the distal phalanx within the foot. He described and graphically explained how a breakdown in the relationship of the dermal and epidermal laminae leads to the crippling displacement of the distal phalanx in the foot in the laminitis case.

Posing the question "Why do diseases affecting the other parts of a horse's body lead to laminitis?", Dr. Belknap

referred to information gleaned from the study of human diseases. He discussed how certain diseases involve, among other things, the absorption of bacterial toxins, activation of white blood cells and inflammation of the entire vascular system (blood vessels) throughout the body, leading to "MODS" (Multiple Organ Dysfunction Syndrome).

Ongoing work in Dr. Belknap's laboratory and other laboratories, Dr. Belknap stated, have demonstrated several similarities with human MODS but with "single organ dysfunction syndrome" of the laminae rather than MODS in the human.

To further help solve the "why" behind diseases which ultimately lead to laminitis, Dr. Belknap pointed to research studies by numerous individuals that support three different theories for the cause of laminar failure in laminitis: 1)blood flow and derangements of blood flow; 2)matrix degradation (of the connective tissue binding the epidermal laminae to the dermal laminae) cause by MMPs (matrix metaloproteases) induced by bacterial toxins; and 3) inflammation. Step-by-step graphic illustrations enabled webinar participants to follow and understand his presentation that also explained cytokines and superoxide radicals.

"Most likely a combination of all three theories- inflammatory, blood flow restrictions and matrix degradation- play a role in answering this question," Dr. Belknap stated.

Dr. Moore discussed the biomechanical forces that cause laminar failure in the diseased or compromised foot. He explained the difference between breakdown of only the dorsal (front) lamine or total laminar breakdown, adding that resulting rotation or sinkage depends on whether the laminar damage involves disruption of the dorsal laminae or all of the laminae around the entire circumference of the hoof. Again, graphic illustrations enhanced the oral explanation.

"Diagnosing laminitis is not difficult once we know what er're looking for," Dr. Moore noted. He added, however, that seeing signs of laminitis means events have been occurring in the horse for house or even days before, and this is often too late to effectively interrupt the pathologic processes.

Among clinical signs for laminitis are a horse's stance, gait, digital pulse and hoof heat. Chronic signs include hoof conformation including rings and/or elongated, malformed hooves.

Dr. Moore shared that imagin modalities such as routine radiography, digital radiography, venography and MRI can help diagnose and determine the severity of laminitis.

"Imaging is getting better and better," he added.

Horses with laminitis can be treated, but not all respond to treatment. High-profile cases include Secretariat and more recently Barbaro.

Theraputic principles brought forth by Dr. Belknap included non-steroidal anti-inflammatory drugs (NSAIDs), DMSO, IV drugs and analgesic drugs. He emphasized that, although NSAIDs are a vital component to the treatment of these cases, individuals should be aware of potential toxic side effects of anti-inflammatory drugs and that NSAID drugs alone usually do not relieve the pain.

"Each horse will respond differently to treatment," Dr. Belknap stated. "You have to see what works with each horse."

Dr. Moore addressed the importance of reducing mechanical forces when a horse has laminitis. His list included steps such as minimizing movement and trying to get the horse to lie down or using a sling for severe cases. He noted that, while slings have improved through the years, they can still cause injury to animal and man if used improperly or if the animal does not adapt to it.

Additional topics discussed during the webinar included but were not limited to complications of laminitis and treatment of chronic laminitis.

In summary, Dr. Moore urged clinicians, farriers, and scientists to "work together as a team and share knowledge, ideas, and experience." He acknowledged that more research is needed in this area. To date, a significant amount of funding for laminitis research at The Ohio State has come from the USDA.

The webinar was sponsored by four commercial companies- Vettec, AIRshoe, Delta Hoof Care and EquiLife- and was viewed by individuals from the United States, Canada, South America and 22 other countries. Individuals could post questions for Drs. Moore and Belknap to answer during and after the webinar. The "Understanding Laminitis" webinar will be available for viewing at www.thehorse.com in July.