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Common Hock Abnormalities Found on MRI



MRI can provide a look at both bone and soft tissue structures in the hocks from multiple planes of view.

Photo: Stephanie L. Church, Editor-in-Chief

The hock is a notoriously difficult structure to get an inside look at. With five joints, numerous bones, and multiple soft tissue structures contained in a relatively small area, pinpointing sometimes microscopic issues can be a challenge. But with more advanced technology comes a better chance of obtaining a clear picture of the hock, along with the issues that can impact it.

At the 2015 American Association of Equine Practitioners' Convention, held Dec. 5-9 in Las Vegas, Myra Barrett, DVM, MS, Dipl. ACVR, shared the results of a study in which she examined the most common lower hock abnormalities identified on MRI exam. Barrett is an assistant professor of diagnostic imaging at the Colorado State University College of Veterinary Medicine & Biomedical Sciences, in Fort Collins.

Barrett said the hock is a complex structure with two upper and three lower joints. The distal (or lower) joints are subject to a number of injuries and issues that result in lameness. Common diagnostic options include radiography, ultrasound, and diagnostic analgesia, which, due to the hock's aforementioned complex anatomy, all have limitations in successfully localizing and diagnosing the lameness.

"Ultrasound only allows us to look at soft tissues and with less resolution than MRI, in addition to the surface of bone," Barrett explained. "Radiography requires more advanced bone damage before it's detectable compared to MRI and is also limited by the superimposition of structures. Diagnostic analgesia doesn't allow us to specifically pinpoint the source of pain, just gives us a general region."

On the other hand, Barrett said, MRI can provide a look at both bone and soft tissue structures from multiple planes of view. Thus, it could allow veterinarians to diagnose injuries that might not be visible on other forms of imaging. It could also help identify issues improperly diagnosed with less advanced means and, as such, not responding to treatment.

To find out which abnormalities veterinarians can detect via MRI, Barrett and colleagues conducted a retrospective study in which they reviewed MRI images from 125 limbs belonging to 103 horses presented for an MRI exam of the hock.

Frequent findings included:

- Commonly, osteoarthritic changes;
- Sclerosis, or hardening, in the central and third tarsal bones;
- Osteophytes, or bone spurs (these were mostly mild and detected in 70% of distal intertarsal joints [DIT] and 64% of tarsometatarsal joints [TMT], the two most commonly affected lower hock joints);
- Subchondral lysis, or loss of the bone beneath the cartilage, ranging from mild to severe (identified in 42% of DIT joints and in 51% of TMTs);
- Articular lysis, or loss of bone in the joint, most commonly in the small cuboidal bones;
- Bone marrow lesions (found in the fourth tarsal bone in 19 limbs and the second tarsal bone in 15 limbs);
- Proximal suspensory desmopathy, or inflammation and tissue damage of the upper part of the suspensory ligament, in 54% of horses; and
- Articular lysis between the small cuboidal bones of the tarsus, which is an area that is difficult to evaluate radiographically.

"A range of pathologic changes can occur in the distal tarsus that result in lameness," Barrett said. "The use of MRI has revealed types of lesions that can be difficult to impossible to identify with radiographs."

Barrett cautioned that she hasn't looked at normal horses' hock pathology, so it still remains unclear what issues will show up in horses without lameness. However, she said, "understanding the range of pathologic processes in the tarsus can help the practitioner identify when advanced imaging may be warranted in cases refractory (not responding) to standard treatment protocols.

"There is a range of pathologic changes that can occur in the tarsus and proximal metatarsus that may not be recognized with other diagnostic modalities," she continued.

She said that MRI is a "valuable tool" veterinarians can use when diagnostic analgesia results are confounding and it can help in case management by revealing specific diagnoses, aiding in developing tailored treatment plans, and providing better prognostic information.