



Horse Care

Diagnostic Imaging: Diagnosis Of Foot Problems

by HEATHER SMITH THOMAS

When a horse goes lame, often the problem is in the foot. It's crucial to pinpoint the cause of lameness in order to determine the best way to deal with it and treat the horse. Several diagnostic techniques are now available for advanced imaging, to aid the farrier and veterinarian in finding out exactly which structures are involved, but this fact does not make traditional lameness examinations less important.

As stated by Dr. Stephen O'Grady, we are living in a world where we tend to rely on a lot of machines to tell us what's wrong—whether in human medicine or veterinary medicine. “Instead of using our hands, our senses and a good physical exam before we jump to other modalities, we tend to skip right to modern technology,” he says. Often the diagnosis could be determined by using traditional methods, and with less expense.

When you approach the horse, there should be a series of logical steps followed, to try to determine why and where that horse is lame. “Let's say you are told the horse is lame in the left front foot. All too often this is what's in your mind and the first thing you do is pick up that foot to examine it, rather than look at the horse,” he says. But by doing this, you might miss something else.

The best scenario is to do a thorough physical examination, make a complete examination of the foot (using hoof testers, etc.) and have a good look at the total horse. “What kind of foot conformation does this horse have? Does he have a low heel or does he have a club foot? Is the hoof capsule distorted? Does he have a long pastern? Does he have an atrophied frog?” asks O'Grady.

“Secondly, after we've examined the limb and foot (and determined that the problem is probably in the foot), we go to local anesthesia—nerve blocks. If we do a PD (posterior digital) nerve block and the horse goes sound, that anesthetizes about 90 percent of the foot. We could do other blocks to localize it a bit more, but now we have found the area of concern,” he says. Then we can try to pinpoint the problematic structure in that area.

Step By Step Process For Diagnostic Imaging

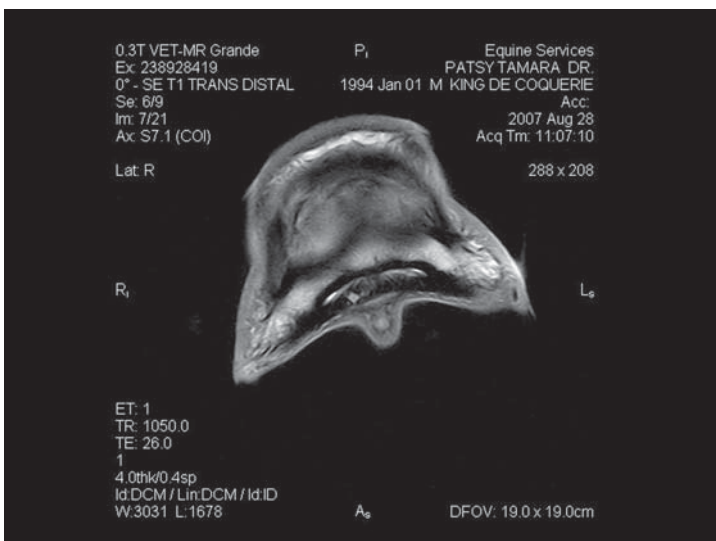
If we haven't found anything on our physical exam to explain the lameness (no bruising, hoof separation, white line disease, corn, thrush, etc.), the first logical step would be to take a set of good radiographs—to look at the bone and the soft tissue. “When you take foot x-rays, you want at least five views, because with the x-ray you are now looking at the whole foot instead of just one or two sites,” he explains.

“If there is pain in the heel area or over the frog—and the radiographs are not conclusive (they don't show anything wrong)—then our next step would be to use ultrasound. With a digital ultrasound machine, you can image through the frog. From this view you can look at the navicular bone, the impar ligament, deep flexor tendon and other soft tissue structures that you can not see radiographically,” says O'Grady.

You can also use ultrasound to look at the back of the pastern, and to image the collateral ligaments at the coronary band on either side. “You can only image the top part of the ligament, however; you can't image the part that's down in the hoof capsule.” Ultrasound won't go through the horny wall. But if the problem is in an area you can access with ultrasound, you can pinpoint it without having to go to more advanced imaging modalities.

Finding the definitive diagnosis is a step-by-step process; you first try to determine the cause of lameness by using the easiest and least expensive techniques, and only go to the next step if you still can't find the problem. The next step after x-rays and ultrasound would be nuclear scintigraphy (bone scan). “The horse is injected with radio-isotopes, and then viewed with a gamma camera. The radioactive isotopes will congregate/accumulate in areas of inflammation (“hot spots”), which then show up on the images,” he says. With scintigraphy, you can look for a problem in either the bones or the soft tissues.

“This will tell you where there's inflammation. It won't tell you what it is, but can pinpoint a certain area. You can have two phases for the scintigraphy—a bone phase and a soft tissue phase. The bone phase, for



An MRI “slice” of a foot

instance, could show you a broken coffin bone that you couldn't see on an x-ray yet; you may not see this kind of fracture on an x-ray for up to a week after it happens, but the bone scan will pick it up immediately. Scintigraphy can also show you bone edema in the navicular bone, or bursitis—telling you where the problem is,” says O’Grady.

“If the client can afford it, you may want to take this horse to the next level and get an MRI.” The MRI (magnetic resonance imaging) utilizes an intense magnetic field and can give excellent views of the soft tissue structures as well as bones, enabling one to see changes or injuries.

“The bone scan has told you where, and an MRI can tell you what it is—whether it’s a collateral ligament or a bursitis, or edema in the navicular bone, or a thickened impar ligament, et cetera,” explains O-Grady.

The Farrier’s Job

If the horse has a foot lameness and the problem can be isolated with a physical exam, that may be the extent of what’s needed in diagnosis and we can move directly to treatment. We’ll drain an abscess or protect a certain area of the foot, or unload one area, or whatever treatment might be obvious.

Then there are the cases where it’s not so obvious, but the horse blocked sound so we know the general problem area. “At that point the veterinarian and farrier must figure out what to do with it. First we try to change the hoof capsule back to what we consider the ideal foot. Other things we might do include raising the heels or moving the breakover point,” says O’Grady. We don’t really know what’s gone wrong so we are guessing at ways to fix it. Unless we have a definitive diagnosis we are gambling and just trying various things.

“There are basically three things we can do mechanically: we can put the shoe in a different place on the foot, we can elevate the heels and we can change the breakover. But if we go the extra step and have an actual diagnosis before we begin—knowing we have a fracture or a strained deep flexor tendon or impar ligament or collateral ligament—it gives us justification to use a certain type of farriery,” he explains. The farrier is no longer shooting in the dark.

“If the horse has a torn collateral ligament, you may want to move the shoe over to one side, make it wider under that side and change the breakover on the other side. There a several things we can do that make sense, mechanically, to

help that condition. Each horse is an individual, however, with different foot conformation, so you will treat each one a little differently, depending on what he needs.”

What you ultimately do for each horse—and how far you go in taking the steps to figure out what the problem is and how to treat it—will partly depend on the value of the horse, it’s career and how much the owner wants to spend. “The nice thing about the MRI is that in almost all cases it will give us a definitive diagnosis, which can be very helpful. One of the biggest advantages is that it tells us when we have to rest the horse,” says O’Grady. Otherwise, we may keep trying various treatments and mechanical “fixes” in our trimming and shoeing, that won’t help—and may do the horse more harm in the long run because he is never given enough time off to heal the injury. 🐾

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