

# New Hope for 'Navicular' Horses



*Horse Care*

by HEATHER SMITH THOMAS

In earlier years, a diagnosis of navicular disease was often considered career-ending for many horses. Chronic lameness was typical, in spite of therapeutic shoeing, medication, etc. Sometimes, the only option to enable the horse to travel sound again was neurectomy, so the horse would no longer feel pain in the foot. Today we realize that what we earlier called navicular disease includes many different problems within the foot, and the term navicular syndrome is now used. Some of these injuries have a good prognosis for healing and full recovery, if given time and proper treatment. Yet for many years, accurate diagnosis was elusive, since it's difficult to view the inside of a living horse's foot. Ultrasound, x-rays and nerve blocks have been used to aid diagnosis, but results of these tests may be misleading or inconclusive. With the advent of MRI (magnetic resonance imaging), however, we can finally "look" inside the foot and are able to make more accurate diagnoses, and can learn more about what's actually going on within the hoof capsule.

Sarah Sampson, DVM, has been doing research on 'navicular syndrome' horses at Washington State University for five years. "We've had a high-field magnet here for 11 years, and MRI has brought to light the various problems that occur in these horses. Many of the things we were never able to diagnose in live horses we are now able to see. This has given us ideas about new ways to treat them, as we realize they actually fall into different categories," she says.

Some of these horses have navicular bone disease while others have different problems—even though they were all lumped together because of the common symptom of foot pain. "We suspected that these horses had a variety of problems (prior to MRI), but didn't have a way to prove it while they were still alive," she says. A necropsy was the only way to reveal some of these problems.

"Now we know some horses have bone damage, and others only have tendon damage (deep digital flexor tendon), and others may have a ligament involved. All these horses can block to a palmar digital nerve block and present the same on clinical evaluation during a lameness exam. There are many different lesions that we can see now in these horses, that may not be related to the navicular region," says Sampson. There may be lesions within the distal part of the digital flexor ten-

don sheath, or osteoarthritis in the pastern joint. It is often impossible to pinpoint the actual area of injury using traditional diagnostic techniques like x-rays and ultrasound.

"This information opened our eyes to new ways to treat these horses—enabling us to look into developing new treatment options for specific injuries. We have funding to look at treatments for horses with damage to the collateral sesamoidean ligament—a common ligament affected in horses with navicular syndrome. In the process of this research, and in our client horses, we continue to evaluate horses with MRI. There are horses who have only one structure affected within their foot and others who have a multitude of structures affected at the same time. These can be ligament damage, tendon damage, bone damage, cartilage damage, etc.," she explains.

Another study presently underway involves a new treatment for navicular bone disease. "Horses with navicular syndrome are often lame before there are changes in the bone visible on radiographs. MRI has been very important in diagnosing horses who have no changes visible on radiographs. This does not necessarily mean these are early cases. We see a lot of horses who have been chronic for years but still don't have radiographic changes." A horse can have advanced bone disease without showing definitive signs on radiographs.

"We are publishing two papers this year, comparing horses without radiographic changes—who were diagnosed with damage in the heel region by MRI. We looked at a group of 72 horses with clinical signs of navicular syndrome that became lame within the last six months. In the second paper, we compared the lesions we found in those horses (with recent onset) with a group of 90 horses with chronic navicular syndrome who had been lame for more than six months, commonly for many years. From these cases, we have been able to gather information on prevalence of structures injured and use this to give us ideas for new treatments for horses with specific problems," she says.

She tells owners, trainers, and referring veterinarians that the MRI can affect the way we treat horses. "Even the cases we assume are typical navicular syndrome can surprise us—when we are able to do an MRI and discover what is actually going on in their feet. If people can afford it, the best way to definitively diagnose horses with foot pain is to MRI their feet," says Sampson.

If MRI is used earlier in the diagnosis of lameness, this can save owners a large amount of money that they now spend on repeat lameness exams and blocks, repeat radiographs, joint injections, shock wave therapy, loss of training and competition time due to rest or continued lameness, etc. without a definitive diagnosis. "Obtaining a diagnosis early in the course of disease can streamline the treatment and prognosis, save money in the long term, and possibly improve the prognosis for return to competition for the horse," she says.



*A horse being examined in an MRI machine*

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## Horse Care Cont'd.

"We've found horses with coffin bone fractures that weren't visible on x-rays, but were treated like 'navicular' horses because they blocked to the heel. If these are managed as a navicular syndrome horse, they don't heal because they don't get the rest they need, and are not put in the kind of shoe they need. I had a moderately lame eight-year-old horse come in, and the owners worried that it had the beginnings of navicular disease. He had been lame for two months and they'd turned him out to pasture for rest. We took six projections of the front foot with digital radiographs and couldn't see anything to explain the lameness, so he underwent MRI of both front feet and it was clear there was a non-displaced fracture of the coffin bone at the back of the coffin joint. This horse also had inflammatory signal changes within the cavity of the bone surrounding the fracture line," she says.

"The horse was treated for that injury. He needs prolonged rest and to be shod in a special shoe to eliminate any movement in the coffin bone as it heals. This horse was not as lame as we often think of horses with coffin bone fractures to be, and therefore a fracture was not suspected. With proper diagnosis, he went from a horse who we thought might have the start of navicular syndrome to a horse who has a good chance for future soundness, if treated properly," she points out.

"Another case was a five-year-old stallion who blocked to a palmar digital nerve block on a front foot. Multiple radiographs had been taken at different times and all were normal. He had been blocked multiple times to try to pinpoint the problem and it was always localized to his heel region. He remained lame for over a year and eventually came to WSU for MRI. We found he had an epidermoid cyst (abnormal mass) in the lowest part of his digital flexor tendon sheath that was impinging on his deep digital flexor tendon. Many people don't realize the digital tendon sheath extends through the pastern and down past the heel bulbs," she says.

"Once we saw the mass with MRI, we were able to remove it surgically. That horse has been in performance now for more than three years, and he's sound. We often encounter lesions like this—something turns up that you never would have thought would be there. It gives some of these horses a good chance to have a normal life. They don't have to be a 'navicular' horse for the rest of their lives."

"In horses that do fall into navicular syndrome category (the bone and its associated ligaments) with an MRI, we can determine more specifically whether to inject them and where to inject them, or, if it's a more recent tendon injury we may decide that a rest program may be helpful, based on the tendon injury and the history associated with it. We are trying to get a better feel for what injuries do respond to rest, and which ones do not, and which horses do better with injections of steroids and hyaluronic acid, and which horses are not responding. We are trying to break these into groups so we can give more specific recommendations to owners,"

says Sampson. Then owners can put their money where it would be most helpful, or not spend it, if there won't be a reasonable chance for a good outcome.

"Also with the MRI, we find that a lot of tendon injuries extend up into their digital flexor tendon sheath. That gives us another option in treating them—to put steroid and hyaluronic acid into the digital flexor tendon sheath, which is something we can do at the fetlock region. We can send them home, and the sheath can be injected multiple times by the referring veterinarian if lameness recurs," she explains. This had not been an obvious treatment route until these horses were looked at via MRI, discovering lesions that extended from the foot up into the sheath.

"We can also determine, from the MRI, whether we think coffin joint injections will be good enough for some horses, or if we need to spend extra money to do navicular bursa injections. If they have a deep flexor tendon lesion down behind the navicular bone, in an area covered by the navicular bursa, then it may be worth the extra money to do the bursa injections, as opposed to doing the coffin joint injections. We can now give the owner more information, with a solid reason for our recommendation. Then they can make an informed decision on whether to spend the additional money," she says.

The MRI gives more information than any other diagnostic modality, even better than necropsy in some ways. "We can get thinner slices (images) of everything, as opposed to just taking the foot apart, looking at the outside and making certain cuts through different areas. With the MRI we are able to look at 'slices' that are only three to four millimeters thick, through the whole foot. Also, since it's still living structure we can see changes at a molecular level. This can tell us more about every structure within the foot, and the entire extent of each structure is imaged. Even if we have a horse we end up humanely euthanizing, we may go ahead and MRI the feet afterward to gain more information than from a necropsy," she explains.

In the future there will be more MRI machines available in more locations, for equine patients. The number has already increased in the past few years. "We were initially the only one in the U.S. for many years, but as the benefits of this diagnostic modality have become recognized in horses, more veterinarians are realizing how important it is to be able to offer this diagnostic to horse owners. There are a few private clinics and a few universities in the U.S. with high-field strength magnets now. There are also private clinics and universities that have lower field strength magnets—that horses can stand and be imaged in, or magnets where you anesthetize the horse to get them in. Over the past 10 years, the price has decreased; eventually more veterinarians will be able to afford them," she says. The cost to the horse owner may drop, as well.

Even though the MRI is expensive, it often pays to do it early on in the search for a diagnosis. "Often by the time a horse comes to us, the owner has already spent more than \$1,000 to try to find out what's wrong," explains Sampson. The MRI is often chosen as the last resort, but it shouldn't be.

"If they choose to do the initial workup with an MRI, it's

will cost \$1,500 to \$1,800, but they will have a diagnosis quickly. The cost includes the MRI, three to five days board for the horse's stay at the hospital, and general anesthesia," she says. The expense for an MRI is often covered by insurance, if the horse is insured for major medical.

If a horse has an acute lameness and the owner is trying to figure out whether the horse will make it to an important show or race that year, it's helpful to know what's causing the problem. The owner needs to know whether this is something that might respond quickly to treatment or if it is a condition that needs more rest. "Do you spend another \$10,000 in training fees and try to keep going, or not? If horses are in the middle of their competitive season and have a lameness issue, we can evaluate them with MRI and try to figure out the quickest way to get them back into work. The MRI is often the fastest way to get an answer, if there is nothing obvious on radiographs. Our goal is to get owners and referring veterinarians to understand this. It's an educational process."

"If people are trying to decide whether an MRI will make a difference for their horse, we tell them that for over 90 percent of the horses we put in the MRI for foot issues, it changes how we treat them." This can make all the difference in helping the horse recover.

"Regarding navicular syndrome itself, we are getting a handle on the diagnosis part, but we still don't know what causes navicular syndrome. We still don't know why some horses' navicular bones or surrounding soft tissue structures start degenerating. There are many theories and it is clear that there is more than one cause of navicular syndrome,"

she says. Several different horses of similar breeding, doing the same work, may develop different problems and some will never have lameness problems.

There will be a lot more research involving larger numbers of horses over the next two years. "We have three research papers coming out this year, looking at horses with early onset navicular syndrome, and at what that group has in common and comparing those cases with chronic cases of navicular syndrome—and how many of those horses make it back to performance. The third paper is looking at navicular syndrome horses diagnosed with primary deep flexor tendon injury, comparing how those horses respond to treatment and use compared to the previous two groups of horses."

Is this better or worse than having a bone problem? "We are working on these projects and we'll know more in the next few years. We have lots of ideas about what to do with these horses, and need to find out if these ideas will work," she explains.

Proper diagnosis is the place to start. "If there is something odd going on in the foot, we can see it. We had one recently with a middle phalanx (short pastern bone) stress fracture that wasn't visible on radiographs. We get a lot of cases that are not navicular, even though they block to the heel and are sensitive to hoof testers. They have something else going on that would remain unknown, without an MRI. So we first need an MRI, and then we can determine if we have a treatment that can help."

Anyone wishing to find out more about the studies can contact Dr. Sampson by e-mail at [sarahs@vetmed.wsu.edu](mailto:sarahs@vetmed.wsu.edu) or by phone via the WSU Veterinary Large Animal Clinic at (509) 335-0711. 🐾