Equine Navicular Disease/Chronic Heel Pain: A Common But Misunderstood Problem

The loss of use resulting from chronic lameness (pain in a limb that causes visible change in gait) costs the equine industry hundreds of millions of dollars annually. Foot lameness makes up a high percentage of this lameness, and the heel structures of the foot are the most commonly affected part of the foot. Within the heel sits the infamous navicular bone. Problems associated with the navicular bone and surrounding structures are the most common cause of chronic front limb lameness in horses.

Navicular disease (also called navicular syndrome or chronic heel pain), refers to a poorly understood degenerative process within the navicular bone. In this article, I discuss the basic anatomy and function of the navicular bone and the heel area. I then describe the types of horses often affected by the disease, diagnosis of the problem and ideas for treatment and management. Much is still not understood about this problem. In fact, new diagnostic technology has shown us that lameness problems in the heel of the foot are more complicated than we previously thought.

FORM & FUNCTION

A little basic anatomy is critical to an understanding of this problem. The coffin bone is the main foot bone and sits within the hoof and is approximately the shape of the hoof. Running down the back of the limb, diving into the heel of the foot and attaching to the "palm" of this coffin bone, is a rope-like tendon called the deep digital flexor tendon. Think of a horse bearing weight and imagine the fetlock (ankle)

sagging down under the weight. The flexor tendon acts as a sling to support this weight. With weight-bearing, the flexor tendon is stretched (under tension), by the horse's weight. The navicular bone (named after its ship-like shape) sits wedged (as a pulley) under this tendon and behind the coffin bone and redirects the force of the tendon such that the mechanics work to keep the toe pulled down and the lower limb functioning.

Given this structure, it is important to understand that the navicular bone is a critical part of the coffin joint of the lower limb. Likewise, because of the mechanics involved, the navicular bone is under tremendous compression with weight bearing.

SIGNS OF NAVICULAR DISEASE

Usually navicular disease appears as a low-grade lameness that gradually worsens, often misleading horse owners into thinking that "this is just the way my horse travels." In many cases, the chief complaint is simply poor performance or unwillingness to work. People often notice that the problem is worse on hard ground, seems to be present in both feet, and seems worse in a circle to one direction or another. Some horses "point" the more painful foot when at rest to relieve pressure and pain in the heel. Some develop a short, choppy gait.

As with many types of lameness, the abnormality is most noticeable at the trot. Swelling or heat in the area is generally not present. Unlike many other problems that result in lameness, navicular disease does not usually improve with rest.

OTHER IMPORTANT POINTS

- Navicular disease is very common in Quarter Horses, but is also common in other breeds, including Thoroughbreds and Warmbloods. Generally, it occurs more in large, heavy horses with relatively small feet.

- While certain foot characteristics seem to be associated with the development of navicular disease, it can affect feet of any shape or conformation.
- While heel pain can be associated with poor shoeing or trimming, this is often not the case. Genetics, conformation, hoof imbalance, work intensity, and many other factors are thought to play a greater role in the development of this problem.
- Unlike many arthritis-type lameness problems, “classic” heel pain is most commonly seen in relatively young horses.
- Classic navicular disease process can be seen at autopsy as aging-like bone degeneration.

THE VETERINARY EXAM

Diagnosis of this disease is based on a thorough veterinary exam that takes into account the type, breed, conformation and age of horse, and the history of the problem. A thorough physical exam and lameness exam generally suggest that the origin of the problem is not higher up the limb and seems to affect both front limbs. Foot conformation and gait characteristics are evaluated and support the diagnosis. Flexion exams and hoof tester responses add to the whole picture, from which a diagnosis is made.

A critical part of the exam is the diagnostic nerve block. In this procedure, the nerves that supply sensation to a particular part of the limb are anesthetized with a short-acting local anesthetic. The horse’s gait is evaluated after the area in question is numb – in this case, the nerves supplying feeling to the heel and navicular. Following the block, the heel would be numb and the horse would be trotted again. If the pain comes from within this “blocked” area, the lameness is improved. If pain is coming from somewhere higher up the limb, the horse would still be lame and different blocks would need to be done to determine the origin of the

pain. It is important to understand that the nerve block does not only block the navicular bone in this case, but the surrounding structures as well. This complicates the diagnosis.

If the exam and nerve blocks define the heel as the painful area, high quality radiographs (x-rays) are taken and provide additional information. The veterinary diagnosis of this area takes into account the history, clinical exam, nerve blocks and x-ray, and combines it with personal experience and the "art of practice" to reach a diagnosis.

TREATMENT & MANAGEMENT

The good news is that many cases navicular disease can be helped with treatment. Proper hoof care and shoeing remains the foundation of treatment. When shoeing a horse diagnosed with navicular disease, the goal is to balance the foot and to move the base of support of the foot backward. This approach to shoeing is thought to mechanically relieve stress on the heel and navicular area and thus relieve pain. This is often accomplished with a bar shoe of some type. The important thing for a horse owner to know is that there is not just one way to shoe these horses. There are a variety of techniques that accomplish similar objectives. Working with your veterinarian and an experienced farrier will ensure proper shoeing.

In addition, I commonly inject medication into the coffin joint or navicular bursa in attempt to break the cycle of pain and inflammation in the foot. I have found that this approach, coupled with the change in mechanics from proper shoeing, often results in improvement.

I have also found that systemic medications are helpful in some horses. Phenylbutazone (bute) helps, but it is often not a good answer for long-term maintenance. Drugs like isoxsuprine seem to help some horses, but it is not understood how. Neurectomy or nerving is, in my opinion, helpful to some horses as a last alternative. This procedure involves removal

of a segment of each of the heel nerves, which provides long-term relief of pain. Obviously it does not correct the problem. This procedure has its complications, but in some cases it is the only alternative for a horse to live without severe chronic pain. I have found that other surgical procedures yield mixed results.

CONCLUSION

Problems in the navicular area have been recognized for centuries. However, they are poorly understood and have been treated as though there is one simple process occurring. Radiographs have long been considered the most important part of reaching a diagnosis. However, they do not always directly correlate to the diagnosis or severity of the problem. New imaging methods like MRI allow us to see both bone and soft tissue structures of the foot in never-before-seen detail. What we have learned is that there are a variety of problems that can cause pain in this area that are indistinguishable without utilizing these new techniques.

Examples of injuries that look like navicular disease are strains of navicular supporting ligaments or tiny tears in the deep flexor tendon down low in the foot. It is important to distinguish these from navicular disease, because the treatment for these types of injuries differ. Rest allows ligament injuries to heal, but is not be expected to help a horse with “Classic” navicular disease. More use of these advanced diagnostic techniques in private practice will no doubt help us to diagnose and treat these horses more effectively now and in the future.

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