

How to

examine the FOOT

Good physical exam might help you pinpoint location and cause of horse's lameness — even if it's not the foot

Sometimes veterinarians will block the foot to diagnose lameness and the horse is still lame, so they will disregard the foot as the cause of the problem. At the recent 58th Annual Convention of the American Association of Equine Practitioners, **Debra R. Taylor, DVM, MS, DACVIM**, told veterinarians: don't be too quick to make that call.

"If you look a little closer you might wonder what this horse is trying to tell you," said Taylor, associate professor at Auburn University College of Veterinary Medicine.

Pain in the foot is a common cause of lameness in all horses. The hoof is dynamic and always responding to various loads and stressors. Abnormal biomechanics of the foot may contribute to pain and lameness in other areas of the limb. Many signs, some subtle, some not so subtle, can indicate that the foot is contributing to the horse's lameness, and Taylor reviewed some of them at the meeting.

During the examination, observe the horse walking on hard and soft ground. Taylor discussed one patient that corrected his high coronary band angle and his hoof pastern axis when walked on soft ground. He did this several times. "Does he have to do this because the soft ground doesn't properly support the toe or does he choose to do this because it is a more comfort-

able position?" she asked.

The limbs should be symmetric. Because symmetry is pleasing to the eye, asymmetry is easy to see. Laterality, high/low syndrome, mismatched feet and mild club feet may occur because of uneven weight bearing caused by asymmetric movement, asymmetric tendon tension or pain.

Coronary band

The coronary band provides a lot of information, she said, so examine it closely. A normal coronary band angle should be about 20° to 25° away from the ground and straight or slightly arched. The hair should lie flat along the hoof wall with the hair shafts directed distally.

"Farriers often talk about 'angry hair' and I used to wonder what that meant," she said about her early days as an equine veterinarian. "When excessive hoof wall pressure is present, the hair of the coronary band will often stand out horizontally. It is important to watch for this as an indication of an overworked and distorted hoof wall," she said.

Chronic overloading can affect the shape of the coronary band. "Even a small dip of the coronary band at the dorsal hoof wall is indication for taking a radiograph because there will often be bone remodeling that can be a source of hoof pain," she said.

A low coronary band angle (<20°) is often associated with a high palmar/plantar angle, and a high angle (>30°-45°) is often associated with a low or negative palmar/plantar angle. This affects the forces exerted by the deep flexor tendon on the navicular.



A healthy digital cushion.

If the coronary band of the hind foot is normal and someone were to project a pointer from the coronary band, the ray would strike the knee or below. If it is abnormal, it would strike well above the carpus. Take the time to look at the direction of the coronary band angle to determine if the horse might have a

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negative plantar angle.

“Many horses with negative plantar angles are presented for hindlimb lameness. While these horse’s seldom block sound to the hoof, correcting the negative plantar angle often diminishes the lame-

Walk the horse on hard and soft ground because lameness caused by pain in the distal portion of the limb tends to worsen when the horse is trotted on hard ground.

Photo courtesy of Dr. Taylor



ness. This observation warrants further study,” she said.

Hoof wall

A normal hoof wall should be smooth, without flares or cracks, which would signal chronic, excessive overloading. The surface should have a light sheen. Growth rings should not be prominent. If the growth rings are narrower in any particular region, this could be a sign the hoof has undergone

excessive ground-reaction force in that region, and the circulation is altered or uneven.

Hoof tubules should be straight, and the sole should meet the tight white line at the hoof wall. A foot under stress will be flared or dishd.

Look for bruising. Bruising, which can be hard to see, might be easier to see on a photograph, she said.

Frog

The frog’s morphology changes in relation to the hoof demands and the terrain. The frog width should be 50% to 60% of its length. The frog of a healthy foot has sufficient depth at its dorsal aspect to reach the bearing surface.

“We want the frog to reach the bearing surface. It is stimulated by the ground. If it does not interact with the ground, it is not contributing to weight bearing,” Taylor explained.

The central sulcus of the frog should be wide enough that the veterinarian can lay his or her finger in it. If it is narrow and contracted, it will harbor thrush-causing organisms and can become a primary source of pain.

Collateral grooves can be used to predict sole depth, P3 suspension, palmar angle and heel development. The veterinarian can predict distal phalanx orientation by assessing the depth and slope of the collateral grooves. Sole depth decreases as collateral groove depth decreases. The slope of the collateral grooves in the front half of the foot parallels the palmar/plantar angle. This information might help decide what types of hoof care and protection the horse may need when radiographs are not readily available.

Palpation

Palpation should start with assessment of the temperature of the

hoof wall, coronary band and heel bulbs by using the palm or the back of the hand.

- Elevated temperatures can signal inflammation, infection or the prodromal stages of laminitis.
- Decreased temperature can signal poor perfusion and a host of problems, such as chronic laminitis.

When palpating the digit, the normal coronary band should be full or spongy with no evidence of a shelf or ledge where a finger can be placed behind the proximal aspect of the hoof capsule. A ledge or shelf would indicate the distal phalanx is located deeper than normal within the hoof capsule. If this occurs, there are usually other abnormalities present, such as thin or flat soles and/or coronary band distortion.

When palpating the heel, the volume of the heel is important because it represents the volume of the digital cushion. The digital cushion should be 2 inches thick and three or four fingers wide. It should feel firm like a tennis ball or a well-done steak. When the digital cushion is pushed, there should not be a lot of give, and the frog should flex slightly.

Collateral cartilages should be thick and slightly bendable with moderate pressure, Taylor noted.

Although hoof testers might help rule in or out the presence of pain associated with the hoof wall, sole, dermal tissues and digital cushion, false-negative and false-positive indicators are common, according to Taylor. However, they can help assess the integrity of the structures of the hoof capsule.

Many foot problems produce similar clinical signs, so careful examination of the feet can help the clinician diagnose the location and cause of a horse’s lameness, according to Taylor. **MeV**