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Ultrasound: An Invaluable Tool In Equine Medicine

There was a time when the only practical use of ultrasound in equine medicine was to diagnose pregnancies and bowed tendons. With recent advancements in ultrasound technology, the image quality has improved tremendously. It is now possible to identify subtle injuries and to image parts of the horse that before now could not be seen. In fact, you may be surprised at the number of ways that ultrasound is being utilized in equine medicine.

The cornerstone of ultrasound use in equine athletes still centers around the tendons and ligaments that course down the back of the front and hind limbs. These supporting structures are under a tremendous amount of stress during exercise, making them prone to injury.

We are able to evaluate the cross-sectional area (size), echogenicity (density) and fiber pattern of these soft tissue structures. Once the injury is diagnosed, recheck ultrasounds (generally at 60 day intervals) allow the veterinarian to evaluate the healing and strength of the injured tendon/ligament. This information allows the veterinarian to constantly adjust and customize your horse's rehabilitation program to prevent re-injury.



The evaluation of joints is another important use of ultrasound in our equine athletes. While radiographs (X-rays) give us important information regarding the *bony* changes within a joint, we need ultrasound to evaluate the *soft tissue* structures within the joint. Some of the structures we evaluate include the joint fluid, joint lining (synovium), collateral ligaments, menisci and articular cartilage. The joints that we commonly evaluate via ultrasound include the coffin joint, fetlock joint, hock, stifle, elbow, shoulder and even the temporomandibular joint. By combining the information from radiographs *and* ultrasound, your veterinarian can get a very thorough picture of the condition of the joint.

Ultrasound guided procedures have allowed veterinarians to fine tune many diagnostic and therapeutic procedures. Once the target area is visualized with ultrasound, a needle or biopsy instrument can be introduced and visually guided directly to the target area. For instance, ultrasound can guide a needle into deep joints such as the neck or hip so that they may be blocked or treated

with steroids. Ultrasound can aid in the biopsy of deep organs such as the lung, liver or spleen. It can also be used to obtain a sample from a deep fluid pocket or internal abscess. One increasingly popular treatment is ultrasound guided injection of stem cells into a core lesion within a tendon or ligament. Without this useful tool, many disease processes would go undiagnosed or untreated.

Fortunately, heart problems are not that common in horses. However, if your veterinarian diagnoses a heart murmur in your horse, ultrasound is an invaluable tool to provide information regarding cause and prognosis of the murmur. Ultrasound can tell us which valve is affected and how severe the regurgitant blood flow is. Ultrasound may also help guide the treatment plan; for instance, the treatment will be very different for a heart valve with an infection versus a valve with a degenerative lesion. Some ultrasounds have specialized programs to determine the size of heart chambers, thickness of walls, and the speed of blood through a valve. This information can be used to give a prognosis and potentially help determine if your horse is safe to ride.

Ultrasound of the equine abdomen is more commonly implemented, especially in cases of colic, diarrhea, weight loss and liver or kidney disease. On the right side of the horse, ultrasound can visualize the cecum, right kidney, right liver lobe and right dorsal colon. On the left side of the horse, we can evaluate the spleen, left kidney, stomach and left liver lobe. The small intestine and large colon can be seen throughout the abdomen and can be evaluated based on size, motility and bowel wall thickness. Internal abscesses, such as those associated with pigeon fever or Strangles, may also be visualized with ultrasound.

In many cases involving eye trauma, examination of the eye may not be possible due to swelling of the eyelids or severe cloudiness of the cornea. Ultrasound allows the veterinarian to evaluate deeper structures and assess the amount of damage within the eye. The iris, lens, optic disc and retina are all readily visible with ultrasound. This allows immediate treatment to begin without waiting for the swelling to subside so that a complete ophthalmic exam can be performed.

As you can see, virtually every part of the horse's body can be evaluated to some extent with ultrasound. Ultrasound is a relatively inexpensive and non-invasive means to gather a lot of information regarding disease processes in your horse. So, the next time your horse presents himself as a "diagnostic challenge" ask your veterinarian if ultrasound might shed a little light on the problem...



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