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*Our columnist explains how equine sports medicine technologies are building momentum at a pace human doctors can only dream of.*

As a sport horse veterinarian, I sometimes have to step back and ask myself, “How did things change so much, so fast?”

It seems like just yesterday when I was a kid riding alongside my dad in his veterinary truck, and the most sophisticated tools he had were hoof testers and an X-ray machine.

Even a decade ago, diagnostic tools like digital radiology, digital ultrasound and MRI were far-off dreams for all but a few equine veterinarians and clinics.

But in the past decade, our technology in our industry has snowballed at a prodigious rate. Today, the equine veterinarian wields diagnostic and treatment tools that his human clinical counterpart only wishes he could access so easily. And injuries that would have spelled the end of a promising young horse's career in past decades—navicular disease, ringbone, joint arthritis, back problems and tendon and ligament injuries, among others—are detected, treated and healed more quickly than we ever dared to hope back then.

In the late 1980s and through the '90s, technology exploded into private practices as veterinarians actively sought and pursued new technologies for diagnosing equine sports medicine injuries. Digital radiology actually started in private practices and universities caught up some years later, which was a change from the past, when cutting-edge technologies like nuclear bone scans were solely within the university equine hospitals.

Technologies like nuclear medicine, high-tech ultrasound and standing and general anesthesia MRI units have all become commonplace in the private practice world. As state legislatures imposed budget cuts on veterinary colleges, private practices with the horses and clientele to support these new technologies thrived even more.

As diagnostic technology moved rapidly into the private sector, it changed how quickly and accurately we could diagnosis and treat equine athletes. Let's take a closer look at some of the common problems we see and the ways in which our diagnosis and treatment of the issues has improved in recent years.

### **Navicular Problems**

Navicular disease describes a whole range of disorders resulting from the biomechanical weak point at the back of the horse's heel. This encompasses both wear and tear and genetic predisposition, and it includes bony and soft tissue issues.

For years, radiographs and ultrasound diagnosed these problems. But recently, MRI technology has made a huge difference in accurately diagnosing and separating navicular disease and navicular syndrome into its component parts. Once we understand what the specific problem is in the foot, it can be addressed separately and more effectively. As in most matters, the proper diagnosis is the key.

I have a saying: "Absent a diagnosis, surgery is trauma, medicine is poison, alternative therapy is witchcraft." You could add to that, "Corrective shoeing is guesswork." For example, the shoeing for a collateral ligament injury of the coffin joint is quite different than that of a deep digital flexor injury even though the structures are only a few centimeters apart. Getting to a more accurate and detailed diagnosis has made us much more successful in our treatment of this difficult and longstanding foot disorder.

We have also made tremendous strides in the area of navicular disease from a treatment standpoint. Specialized shoes now give proper biomechanical support. Tildren is a drug showing great promise in dealing with inflammation and damage to the navicular bone. Direct Digital Radiographic units made accurate pinpoint injections into the navicular bursa possible. And the new regenerative therapies benefit navicular soft tissue lesions.

So have we conquered navicular disease in the horse? No, but we understand it much better than we did 10 years ago, and we are much more successful in treating it.

## **Arthritis**

Other therapies introduced in the last decade changed our success level in treating common problems like arthritis of the pastern joint. Described in ancient Roman veterinary texts, ringbone, or osteoarthritis of the first and second phalanx in the middle of the horse's pastern, is a problem that has been around for a long time.

But the advent of shockwave therapy (high energy sound waves) has certainly been a tremendous help for horses with mild to moderate ringbone, keeping them useful and non-painful for years.

Shockwave has also been used with great success to treat arthritic problems (kissing spines, arthritis of articular processes) in the backs of horses. This problem has been around for years, but was only recently recognized as a primary instead of a secondary problem.

Due largely to the advent of X-ray technology and nuclear medicine technology, we can now see into these larger, deeper structures of the horse. Once again, when the problem is recognized and diagnosed properly, we can usually come up with a treatment plan that will help many horses.

Recent papers have shown that while alternative therapies such as chiropractic treatment can help back problems, they only last an average of three weeks. Shockwave therapy has been shown to help for an average of four months.

## **Soft Tissue Injuries**

We have always wanted a treatment that we could inject into an injured tendon, ligament or joint—one that would improve the injury and reduce the chance of re-injury. Regenerative therapies including, but not limited to, IRAP (Interleukin Receptor Antagonistic Protein), PRP (Platelet Rich Plasma) and stem cells are doing just that, and almost no one saw this coming, even 10 years ago.

All of these regenerative therapies are initially derived from the individual horse's own tissues. After refining and concentrating the healing properties, the tissues are then processed and injected back into the injured portion. They have been some of the most exciting treatments affecting sport horses in years. Using the horse's own tissues to help repair, strengthen and prolong the horse's athletic life span is one of the most important tools in the sports medicine toolbox.

## **We Forget How Lucky We Are**

Clinicians in human medicine are hampered by regulatory agencies and insurance companies when bringing new therapies to their patients. Luckily, these obstacles have not been major issues in veterinary medicine, and so there is a rapid introduction into the equine sports medicine field as soon as the treatments are shown effective.

But the difficulty of precisely applying therapies in, for instance, tendons and ligaments, is one of veterinarians' biggest challenges in administering new treatments to the horse. It

does very little good to spend significant amounts of money processing, say, stem cells, and then because of inadequate injection techniques, the cells are delivered a centimeter or more away from the injured tissue we are trying to repair.

Therefore, at the same time veterinarians were learning to use the regenerative therapies, they've also been improving their ultrasound and radiograph-guided injection skills so as to assure that the therapies are going to exactly the correct area—tendon, ligament or joint.

So is the profession of equine sports medicine in a far different place than it was when I was riding around in my dad's truck just a few decades ago? Yes it is. Are we much more successful in our treatments than we were 10 or 20 years ago? Sure. But do the basics remain the same? Absolutely.

I can still hear Dad say, "Diagnose it before you inject it or treat it. Remember the most valuable tools you will ever possess are your hands, your eye and the mind of a horseman."

And no matter how much technology we hone to help our horses, we should never forget that.

*A. Kent Allen received his veterinary degree from the University of Missouri in 1979. His practice, Virginia Equine Imaging in Middleburg, Va., focuses on top-level sports medicine, lameness and diagnostic imaging, and he's also certified in equine locomotor pathology. He's chairman of the U.S. Equestrian Federation Veterinary and Drug and Medications Committees and serves on the Board of Directors. Allen is also the contact veterinarian for the Fédération Equestre Internationale in the United States and the USEF and answers medication questions for veterinarians and competitors around the nation and the world. He is also the vice chairman of the FEI Veterinary Committee. He began contributing to Between Rounds in 2009.*

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