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## Treating PSD in Sport Horses: Surgery, Shock Wave, or Both?

Horse owners and veterinarians are on a perpetual quest to heal horses' injuries faster, better, and stronger. Veterinary technology has advanced over the years to provide us with more options to do just that. One relatively recent modality is extracorporeal shock wave therapy (ESWT), a noninvasive procedure that uses sound waves to stimulate blood flow and tissue healing. But is it superior to traditional treatments when it comes to healing tendon and ligament injuries?

At the 2015 American Association of Equine Practitioners' Convention, held Dec. 5-9 in Las Vegas, Amy Norvall, DVM, presented recent study results suggesting that focused ESWT helps horses return to function from hind-limb proximal suspensory desmopathy (PSD) faster than surgery or rest. Norvall, now a resident at the University of California, Davis, School of Veterinary Medicine, completed the study when she was based at Virginia Equine Imaging, in The Plains, Virginia, along with Susan Johns, DVM, and Kent Allen, DVM.

Horses with PSD have inflammation and tissue damage in the upper part of the suspensory ligament, a structure that connects to the top back of the cannon bone, divides into two branches which attach to the proximal sesamoid bones, and lies under the superficial and deep digital flexor tendons and the check ligament. Traditional treatment approaches generally involve an extended, expensive period of confinement or inactivity. Surgeons also treat PSD with procedures such as neurectomy of the deep branch of the lateral plantar nerve (cutting or transecting the nerve) and fasciotomy (ligament splitting) or desmoplasty (a procedure in which numerous small longitudinal stab incisions are made in the ligament).

"Hind-limb PSD is a common sport horse problem with reported medical or surgical treatment successes ranging from 41% to 87%," Norvall said. Medical treatment generally consists of ESWT or regenerative therapy. Prior to the advent of these surgical and medical treatment modalities, prolonged rest was the only option (which, unfortunately, has a very low success rate).

Some veterinarians use ESWT to treat horses with PSD, so Norvall and colleagues compared the efficacy of surgery, ESWT, or a combination of the two in treating horses with hind-limb PSD.

The team employed 75 horses with hind-limb PSD treated with a program selected by their owners consisting of surgery or three ESWT sessions. Surgically treated horses underwent one of three procedures—fasciotomy and desmoplasty, fasciotomy and neurectomy, or a neurectomy alone—followed by two to four weeks of stall rest and four to six weeks of walking under tack and small paddock turnout. Norvall said she did not compare the surgical approaches' efficacy to each other. Horses treated with ESWT underwent three ESWT treatments at three week intervals and 10 weeks of quiet, small paddock turnout and walking under tack. If veterinarians determined there was sufficient progress after this initial timeframe, the horses then entered a careful exercise program returning them to work. If they noted insufficient progress in the horse's healing, they recommended additional treatments and/or an extended rest period.

Of the 41 horses that underwent surgery first, 24 returned to their previous level of function, one returned to a lower level of function, and 16 remained lame. Of those that remained lame, 12 were later treated with ESWT.

Of the 34 horses treated with ESWT first, 20 returned to their previous level of work, four returned to a lower level of work, and 10 remained lame. Three of those 10 then underwent surgery.

Of the 15 horses in which the primary treatment failed and the second treatment modality was used, seven returned to their previous level of work.

On average, horses that underwent surgery alone returned to work in 10.1 months, ESWT horses returned in seven months, and horses that had to have both treatments returned to work in 18 months.

These results showed similar success rates between surgery- and ESWT-treated horses, Norvall said. However, they represent a lower success rate than previously reported for horses treated with surgery and a higher success rate than previously described for horses treated with ESWT. It also showed that out of the horses that returned to work after only the primary treatment, those treated with ESWT returned faster than those treated with surgery.

She relayed that further investigation is warranted to determine which cases might be more suited to surgery than ESWT and if there would be benefit in combining treatment modalities.

Owners must consider many factors when electing surgical or ESWT treatment for their horse. Surgery requires general anesthesia and a skilled surgeon. It also requires a period of stall rest. ESWT can be performed at the barn and only requires standing sedation. Obviously, there are also cost differences between the two modalities.

Diagnosing hind-limb PSD requires a combination of a lameness exam, diagnostic blocks, and ultrasound imaging at the very least. In the past it has carried a guarded prognosis because the response to rest alone is poor. However, with the advent of these surgical and medical treatment modalities, owners now have successful options available to them. Unfortunately, some horses are slow to heal and require multiple treatment modalities and an extended rehabilitation period. Regardless of the treatment type, a careful rehabilitation program is crucial.