BCVMA 2001 Meeting
5-6 November 2001
Vancouver, British Columbia, Canada

Radial Shock Wave Therapy® for the Treatment of Insertion Desmopathies in Performance Horses

Brendan W. Furlong, MVB, MRCVS; Marc S. Revenaugh, DVM

Furlong & Associates, PO Box 16, Homestead Road, Oldwick, NJ 08858, phone (908) 439-2821, fax (908) 439-2691, email: bwfurlong@eclipse.net

Introduction

In human medicine, extracorporeal shock wave lithotripsy has been used for stone management in the bladder, kidney and ureter for 15 years.[1]

Recently, Radial Shock Wave Therapy (RSWT) has been introduced to human orthopedics for the successful treatment of insertion tendinopathies such as radial epicondylitis ("tennis elbow") and plantar fasciitis (with or without heel spur).[2] A long term study with more than 200 patients showed an overall treatment success of up to 83% for the tennis elbow patients and 81% for the heel spur patients at a 12 month-follow up.[3]

In the veterinary field, the application of radial shockwaves is at the beginning. First long-term treatment results with this non-invasive therapy for the treatment of proximal suspensory desmopathies were presented by Dr. K. J. Boening at the AAEP 2000 meeting in San Antonio, Texas.[4]

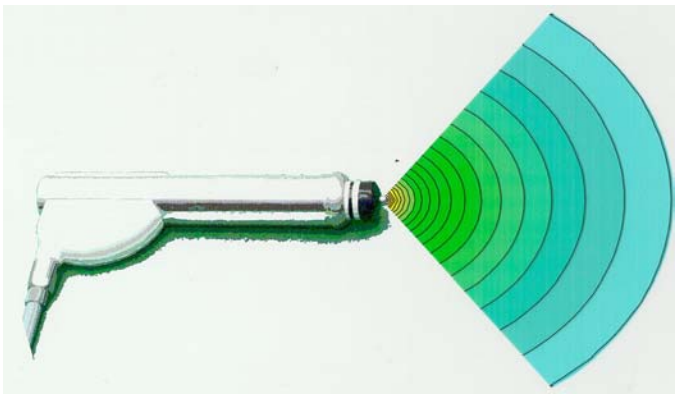
The success results of conservatively treated chronic insertion desmopathies in the front and in the hind limb are not really satisfying. A high recurrence rate makes this orthopedic condition somewhat frustrating. Systemic and local application of antiphlogistica and corticoids, blistering, combined with long periods out of work and –as the last option- surgery are well described and documented.[5]

Since December 1999, 63 performance horses with chronic insertion desmopathies have been treated with Radial Shock Wave Therapy by Furlong & Associates in order to evaluate this new therapy for equine medicine.

Materials and Methods

Sports horses were selected with the diagnosis of a chronic proximal and distal suspensory desmitis exclusively. The patients must have had clinical symptoms for at least three months and at least one failed conservative treatment approach prior to RSWT – in order to avoid effects due to a spontaneous healing. All horses underwent a lameness examination (using the AAEP lameness scale). The majority of the horses got an ultrasound scan; some received an additional bone scan.

We used the Swiss DolorClast® Vet system (EMS Corp. USA, Dallas, TX, website: www.ems-medicalamerica.com) consisting of a control unit, a handpiece with two different applicators (6mm and 15mm) and a medical air compressor. The pneumatic energy generated by the air is used to accelerate a projectile inside the handpiece. When the projectile hits the applicator, a shock wave is created that is distributed radially (spherically) from the tip of the applicator to the pain zone.



In up to 3 sessions, 2,000 impulses per treatment were applied using the 6mm applicator, a pressure of 36 psi and a frequency of up to 10 Hz with a light pressure on the handpiece (the first narrow ring on the force indicator was covered by the distal screw cap).

The patient received a light sedation with 30 μg Domosedan prior to Radial Shock Wave Therapy. Each treatment was performed with the horse standing.

The treatment area was clipped and shaved and prepared with EMS coupling gel to obtain maximum skin contact and to minimize the loss of shock wave energy at the interface applicator tip/skin.

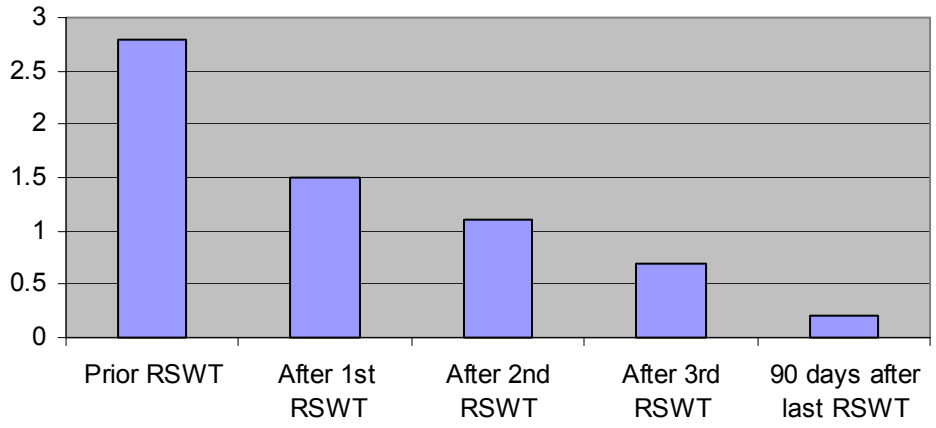
The affected leg was lifted and the superficial and deep flexor tendon was pushed laterally or medially in order to be as close as possible to the origin of the proximal suspensory ligament. 1,000 shockwaves were applied from each side.

Follow up examination was obtained 90 days after the last session. A special training program was elaborated for the time between the sessions and post shock wave therapy.

Results

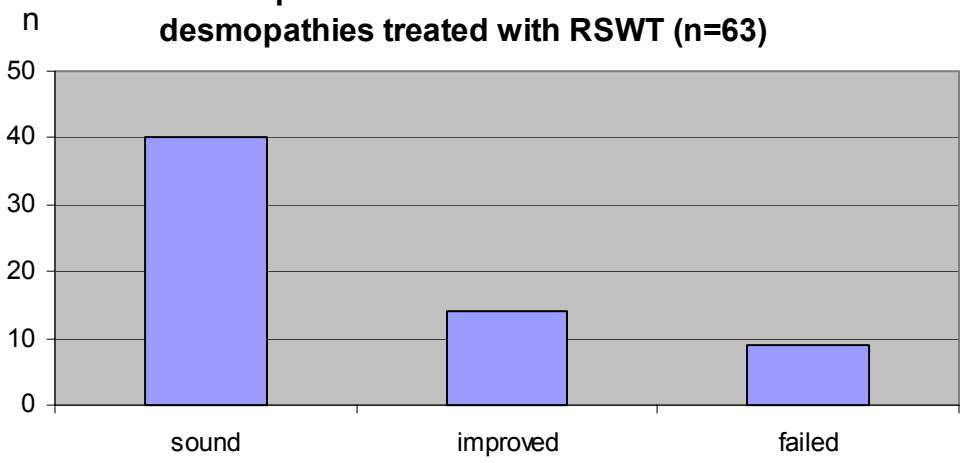
A total of 63 horses with chronic suspensory desmitis were treated with RSWT. Prior to the first treatment, patients showed lameness in various degrees (average lameness degree (ALD): 2.8). Immediately after the first treatment 52 horses had a distinct reduction of lameness (ALD: 1.5). This demonstrates the strong, immediate pain reducing effect of radial shockwaves.

Decrease of the average lameness degree (ALD)



At the time of the first follow-up evaluation (three months post RSWT), 40 horses were free of lameness (ALD: 0.2) and 14 horses had a distinct pain reduction. Nine horses showed no improvement. 36 horses were sound and back to full work; 14 horses had a reduced training program, 9 horses have not started to work yet, four horses were turned out by the owner.

Follow up examination results of insertion desmopathies treated with RSWT (n=63)



In 37 of the 63 horses receiving sonography examination we found ultrasonographic changes at the origin of the suspensory ligament (diffuse hypoechogenic areas, related to fluid accumulation and ruptured fibers).

Conclusion

Radial Shock Wave Therapy is a successful treatment option for chronically lame horses suffering from high and low suspensory desmitis. In this study, the over all success rate was 40/63 horses (65%); 54 of 63 treated horses showed a reduction of pain (86%).

The Swiss DolorClast Vet is a portable shock wave system that offers an excellent non-invasive therapy for insertion desmopathies. A very quick and significant pain reduction during the series of treatments allows an early return of the horses to a convalescent training program; long-term effects of radial shockwaves enable to heal chronic suspensory desmopathies.

First clinical results with Radial Shock Wave Therapy of shins and splints, fractures, navicular disease, back and sacroiliac problems as well as degenerative joint disease (ringbones and bone spavin) are very promising. Further clinical studies are needed to investigate the effectiveness of the Swiss DolorClast Vet for the treatment of these common orthopedic conditions in the horse.

References and Footnotes

[1] Siebert W., Buch M. *Extracorporeal Shock Waves in Orthopedics.*
In: Springer Verlag, Berlin, Heidelberg, Germany, 1998.

[2] Straub T., Penninger E., Froelich T., Lohrer H., Scholl J., Diesch R., Haupt G. *Prospective, Multicentric and Placebo-Controlled Study on Shockwave Treatement of Tennis Elbow and Plantar Fasciitis.*
International Journal of Sports Medecine, vol. 20, 1999 S105/106.

[3] Lohrer H., Schoell J., Arentz S., Froelich T., Straub Th., Penninger E., Diesch R., Haupt G. *Effectiveness of radial shockwave Therapy (RSWT) on tennis elbow and plantar fasciitis*.
Proceedings of the Annual Symposium of the Canadian Academy of Sports Medicine (CASM), Calgary, Alberta, Canada, July 4-7, 2001.

[4] Boening K.J., Loeffeld S., Weitkamp K., Matuschek S. *Radial Extracorporeal Shock Wave Therapy for Chronic Insertion Desmopathy of the Proximal Suspensory Ligament.*
Proceedings of the Annual Meeting of the American Association of Equine Practitioners (AAEP), San Antonio, Texas, USA, vol. 36, pp. 203-207, 2000.

[5] Dyson S. *Suspensory apparatus*.
In: Ratanen NW., McKinnnon AO. *Equine Diagnostic Ultrasonography*. Baltimore: Williams & Wilkins, Baltimore, pp. 447-473, 1991.