Effect of extracorporeal shock wave therapy on elbow osteoarthritis in dogs

D. Millis, DVM, DACVS, CCRP, DACVSMR, M. Drum, DVM, PhD, D. Whitlock, PT, DVM
University of Tennessee College of Veterinary Medicine, Knoxville, TN, USA

INTRODUCTION

Osteoarthritis (OA) is a progressive degenerative process of synovial joints and management is multifaceted. New modalities to manage OA are regularly promoted, but there is little objective evidence of efficacy for many modalities. Extracorporeal shock wave therapy (ESWT) has been used to treat selected musculoskeletal disorders in humans and animals, including OA. There are few studies evaluating the use of ESWT in clinical canine patients. The purpose of the study reported here was to evaluate the efficacy of ESWT in the management of canine elbow OA. We hypothesized that ESWT would have a positive effect on ground reaction forces and clinical parameters of lameness.

MATERIALS AND METHODS

Fifteen skeletally mature dogs with elbow OA, confirmed radiographically, were evaluated. Diet, exercise, and other treatments were maintained the same throughout the study. Dogs were randomly assigned to a treated or sham treatment group. Evaluations included subjective gait evaluations at a trot and walk; comfortable range of motion measurements; and determination of ground reaction forces at a trot. Two baseline analyses were obtained to be certain that the degree of lameness was stable. If both elbows were arthritic, only the more affected limb was selected for treatment. ESWT treatments were administered on days 0 and 14 under sedation. Joints received 240 pulses/min for a total of 500 pulses using a 5 mm focused probe, with the pulses divided and applied equally to the proximomedial, distomedial, proximolateral, and distolateral joint capsule insertion points. The energy flux density used was 0.13mJ/mm2. All dogs were evaluated on days 0, 14, and 28. Data were evaluated using ANOVA with treatment and time as factors. Significance was set at $P<0.05$.

RESULTS

Dogs generally tolerated treatment well. There were mild improvements in outcome parameters in dogs receiving treatment. ESWT resulted in a 3.3% increase in peak vertical force (81.5±4.35 to 83.8±4.33, as a percent body weight) compared with a decrease of 5.4% (80.8±6.02 to 76.4±5.64, as a percent body weight) in sham treated dogs ($P<0.01$). There were no differences in vertical impulse. Mean lameness scores improved marginally at the walk with ESWT (2.1±0.3 to 1.7±0.3) versus deterioration with sham treatment (2.0±0.4 to 2.2±0.5)($P<0.01$), and remained mainly unchanged at the trot. Comfortable ROM remained approximately the same with ESWT, while it decreased 70 in sham treated dogs ($P<0.01$).

CONCLUSION

ESWT is a relatively new modality in small animal practice to treat OA. Elbow OA is particularly challenging to manage, and the cases in this series were moderately lame and most dogs were already receiving standard therapy. The improvement in peak vertical force and lameness scores in this study are similar to what might be expected with NSAIDs or other treatments. ESWT appears to be an efficacious addition to the multimodal approach to OA of the elbow.

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Corresponding Address:
Dr. Darryl Millis - University of Tennessee College of Veterinary Medicine, 8309 Birch Run Lane, 37919 Knoxville, TN, United States - E-mail boneplate@aol.com