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Extracorporeal radial shockwave therapy of hip osteoarthritis

Abstract:

Extracorporeal Shock Wave Therapy (ESWT) is a relatively new treatment modality for dogs. In canine orthopaedics ESWT presents a new treatment option for various orthopedic conditions in dogs. Good results with ESWT have been reported by several veterinarians, but the number of controlled clinical studies is still very limited today. Shockwaves are sound waves that are characterized by a very fast and steep rise in pressure followed by a negative pressure period. As shockwaves travel well in liquids, a coupling media is used to transfer these sound waves into the tissue. Shockwaves can be transferred into the tissue in a focused and in a radial pattern. In contrary to focused shockwaves the energy density and the pressure decrease with deeper penetration depth by using radial shockwaves. Even if the mode of action of shockwave therapy is not completely clear yet, the following hypothesis have been postulated by researchers: A short-term pain reduction may be based on a release of endorphins. A long-term pain relief may be caused by mechanical and chemical effects on a cellular level where shockwaves start healing processes and modulate pain signals. The University of Vienna is currently conducting clinical studies to assess the effectiveness of Radial Shock Wave Therapy (RSWT) in dogs with hip and cubarthrosis. Computerized gait analysis is used to evaluate the treatment success of this new modality. Therefore, the ground reaction forces are measured by four force plates that are mounted on a treadmill. Ground reaction forces (including peak maximal force, mean vertical force and impulses) are assessed before the start of the therapy and before every single treatment session, one week after the last RSWT session as well as 1,3 and 6 months post RSWT Preliminary data show significant positive effects for both indications: most animals with cubarthrosis experience an improvement of all three values already one month after Radial Shock Wave Therapy. The majority of patients with hip dysplasia have got better impulse and mean vertical force values, especially one month after the last treatment session. Even if more scientific studies with more patients and a long term follow up are needed to evaluated the effectiveness of this new modality, our preliminary treatment results suggest that Radial Shock Wave Therapy is a good alternative treatment modality for dogs suffering from osteoarthritis.

Author

Barbara Bockstahler, DVM

Project Group Motion Analysis, Clinic for Surgery and Ophthalmology, University of
Veterinary Medicine, Vienna, Austria