**Capan N, Esmaeilzadeh S, et al. Radial extracorporeal shock wave therapy is not more effective than placebo in the management of lateral epicondylitis: a double-blind, randomized, placebo-controlled trial. Am J Phys Med Rehabil 2015, in press**

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Design: randomized clinical trial

Purpose of study : to test the effectiveness of radial extracorporeal shock wave therapy (ESWT) versus sham ESWT in the setting of lateral epicondylitis (LE)

Population/sample size/setting:

* 56 patients (44 women, 12 men, mean age 47) treated for LE at a university physical medicine department in Istanbul, Turkey
* Eligibility was based on unilateral epicondylar pain and epicondylar pain and tenderness on resisted extension of the wrist for at least 3 months
* Exclusion criteria were a history of trauma at the affected elbow, posterior interosseous nerve entrapment, systemic connective tissue disease, systemic infection pregnancy, malignancies, coagulopathies, anticoagulant use, cardiac pacemaker, and unwillingness to participate in the study

Interventions:

* Randomization was to radial ESWT (n=28) or sham ESWT (n=28)
* All ESWT interventions, true and sham, were done once weekly for 3 consecutive weeks for a total of 3 sessions
* ESWT was delivered at the tendon of the extensor carpi radialis brevis at a total dose of 2000 pulses of 10 Hz frequency at an air pressure of 1.8 bar when the patient’s shoulder was abducted at 45° and the elbow was flexed at 90 °
* Sham ESWT was performed with the same contact gel applied to the same area, but contact of the applicator head with the skin covered by the contact gel was avoided

Outcomes:

* Blinded assessment of outcomes was done at baseline, and at 1 month and 3 months after the end of treatment
* Both groups improved their pain VAS at 1 and 3 months, with no significant difference between group responses
	+ Baseline men VAS scores for true and sham ESWT were 5.3 and 5.8; 1 month scores were 3.4 and 3.5; 3 month scores were 2.1 and 2.6
* Both groups improved on the Patient-Rated Tennis Elbow Evaluation (PRTEE) with respect to the rest pain activity pain, and function, with no statistical difference between groups
	+ The total PRTEE scores for true and sham ESWT were 62.5 at baseline; at 1 month the scores were 41.0 and 46.6; at 3 months the scores were 31.1 and 39.5
* Grip strength was measured as the average of three grip efforts on a hydraulic hand dynamometer; both groups recorded statistically equal improvements from baseline to 1 and 3 month followup times

Authors’ conclusions:

* Radial ESWT was not significantly superior to sham ESWT in patients with LE not responsive to previous treatments, despite trends toward better VAS and PRTEE and grip strength scores with radial ESWT
* These results are in contradiction with those reported by Spacca et al 2005, whose details differed in several ways: the number of sessions, the single-blindedness of Spacca, and the placement of the placebo control interventions
* Although there were 6 dropouts (27.2%) in the sham group and 5 (21.7%) in the radial ESWT groups, the demographic and clinical characteristics were similar between groups, and significant bias is not likely

Comments:

* The conflicting results of this study compared with Spacca 2005 lead to uncertainty regarding the effectiveness of radial ESWT for LE
	+ Statistical pooling of the two studies is not practical because both studies used nonparametric methods to compare groups, probably due to skewed distribution of the numerical scores on which the groups were compared
	+ This prevents doing a meta-analysis, in which statistically non-significant “trends” toward treatment differences can be combined into statistically significant overall outcomes
* However, the blinded measurement of grip strength in this study, compared to the unblinded measurement of grip strength in Spacca, is less susceptible to bias
* Spacca used the Disability of Arm, Shoulder, and Hand (DASH) questionnaire rather than the PRTEE, which is probably better suited to comparing outcomes of treatment for lateral epicondylitis
* However, Spacca had complete followup rather than the greater than 20% attrition in this study
* The overall study quality is slightly higher than that of the Spacca study, but it would be difficult to defend a statement that the difference is sufficient to negate Spacca’s results altogether, in part because the “contradiction” relates to the outcome differences falling short of statistical significance, even though a slight advantage of true over sham ESWT was reported in the study’s tables

Assessment: adequate for some evidence that three weekly sessions of radial ESWT and sham ESWT lead to statistically similar symptomatic and functional outcomes at three months, but a benefit of radial ESWT cannot be ruled out due to uncertainties in the data. It is more accurate to describe the results as “contrasting” with Spacca rather than “conflicting” with Spacca.

Reference:

Spacca G, Necozione S, Cacchio A. Radial shock wave therapy [RSWT] for lateral epicondylitis: a prospective randomised controlled single-blind study. Eur Med Phys 2005;41:17-25.