

Amirjani N, Ashworth NL, et al. Corticosteroid Iontophoresis to Treat Carpal Tunnel Syndrome: A Double-Blind Randomized Controlled Trial. Muscle Nerve 2009;39:627-633.

Design: Randomized clinical trial

Brief summary of results:

- 17 patients (16 women, 1 man, mean age 54) with CTS who completed a study of iontophoresis at the University of Alberta
- Eligibility based on median nerve symptoms confirmed by median nerve sensory and/or motor conduction abnormalities
- Exclusion based on thenar atrophy, previous carpal tunnel steroid injection or decompression surgery, other neurologic diagnoses, or history of trauma
- Randomized to iontophoresis with 0.4% dexamethasone in distilled water (n=8) or distilled water only (n=9)
- Treatments given in 6 sessions over a 2 week period
- Levine self-assessment questionnaire (symptoms and functional abilities) showed favorable changes in both groups over a 6 month follow-up, but no difference between groups was reported; the median Levine score in the dexamethasone group decreased from 38 to 26 at the end of the study; the median score in the placebo group decreased from 36 to 31
- Nerve conduction studies did not change in either group during the study
- Semmes-Weinstein monofilament threshold did not change in either group

Authors' conclusions:

- The results of the study do not support the use of dexamethasone iontophoresis in treating CTS

Comments:

- Authors stated that the sample size was sufficient to detect a 10 point change in the Levine score with a total of 16 patients
- The change in the median score for the iontophoresis group was 12; the change in the median score for the placebo group was 5
- When a parametric test is used, a study with 16 patients is adequately powered to detect a between-group difference of 1.4 standard deviations, a substantial effect size for most variables
- A nonparametric test, such as was used in this study, generally requires more subjects than the corresponding parametric test requires
- This study probably did not have the statistical power that the authors attributed to it
- While the sample is too small to draw any conclusions, the 12 point change in the iontophoresis group appears to satisfy the 10 point requirement of the authors for clinical significance

Assessment: Inadequate to support any conclusions about the effectiveness or non-effectiveness of iontophoresis (sample size too small; iontophoresis group appeared to have met criterion for clinically significant improvement)