

Paoloni JA, Murrell G, et al. Randomised, double-blind, placebo-controlled trial of a new topical glyceryl trinitrate patch for chronic lateral epicondylitis. Br J Sports Med 2009;43:299-302.

Design: Randomized clinical trial

Brief summary of results:

- 154 patients (age and sex not reported) with chronic lateral epicondylitis (LE) participated in a study of glyceryl trinitrate (GTN) at an orthopedics research institute in Sydney, Australia
- The intent of the study was to test the efficacy of topical GTN for LE and to find an appropriate dose of the drug
- Inclusion criteria were age 18 to 70, at least 3 months of symptoms, and at least 4 on a 10 point scale for pain on provocative elbow testing
- Exclusion criteria were BMI over 38, requirement for regular oral or topical analgesia, steroid injection in past 3 months, workers' compensation cases, previous use of GTN, cardiac disease, pregnancy, bilateral elbow disease, previous upper limb surgery, fracture, or dislocation
- Randomization was done into 4 treatment groups: placebo patch (n=35), GTN 0.72 mg/24 hr (n=41), GTN 1.44 mg/24 hr (n=34), and GTN 3.6 mg/24 hr (n=44)
- Patch was to be changed daily, worn for 24 hours, with rotation of placement to avoid skin irritation
- An elbow rehabilitation program was to be done 3 times per day; it consisted of 10 seconds of contraction of wrist extensor muscles, followed by 2 seconds of rest, followed by wrist extensor muscle stretching
- Main outcome was to be pain-free grip strength at 8 weeks, with further follow-up at 12 and 20 weeks; patient-assessed pain relief and global assessment of change were also planned
- At 8 weeks, the only significant treatment effect was observed in the GTN 0.72 mg/24 hr group, which had better ability to carry a grocery bag with handles; no other differences in group outcomes were observed, and the study was aborted at 8 weeks
- A dose-related occurrence of severe headaches was observed, with 8 of the 44 patients in the GTN 3.6 mg group reporting severe headaches, and 5 dropouts for this reason

Authors' conclusions:

- There was no demonstrable effect of GTN at any dose for LE
- The study suffered from the lack of a formal wrist extensor strengthening program, which may account for the lack of efficacy
- Further studies may be needed to determine the role of GTN in treating LE

Comments:

- The authors did perform a sample size calculation which would yield an 80% power of finding a 7 kg improvement in grip strength

- The lack of an observed difference in the main outcome is not likely to be due to a small sample size
- The dose-related headache frequency could limit the usefulness of topical GTN for LE
- It was surprising not to have the exclusion criteria include use of nitrates for other indications; use of sildenafil may also have been a reasonable exclusion criterion
- The exclusion of workers' compensation patients limits the application to a guideline, but it would be rare for the response to treatment to be better in WC patients than in non-WC patients

Assessment; Adequate for an evidence statement that GTN is not likely to significantly improve function in patients with LE