Weintraub et al. Static Magnetic Field Therapy for Symptomatic Diabetic Neuropathy: A Randomized, Double-Blind, Placebo-Controlled Trial. Arch Phys Med Rehabil Vol 84, May 2003

Objective: To determine if constant wearing of multipolar, static magnetic (450G) shoe insoles can reduce neuropathic pain and quality of life (QOL) scores in symptomatic diabetic peripheral neuropathy (DPN).

Design : Randomized, placebo-control, parallel study.

Setting: Forty-eight centers in 27 states.

Participants: Three hundred seventy-five subjects with DPN state II or III were randomly assigned to wear constantly magnetized insoles for 4 months; the placebo group wore similar, unmagnetized device.

Intervention: Nerve conduction and/or quantified sensory testing were performed serially.

Main Outcome Measures: Daily visual analog scale scores for numbness or tingling and burning and QOL issues were tabulated over 4 months. Secondary measures included nerve conduction changes, role of placebo, and safety issues. Analysis of variance (ANOVA), analysis of covariance (ANCOVA) and chi-square analysis were performed.

Results: There were statistically significant reductions during the third and fourth months in burning (mean change for magnet treatment, -12%; for sham, -3%; P<.0 5, ANCOVA), numbness and tingling (magnet, -10%; sham, +1%; P<.05, ANCOVA), and exercise-induced foot pain (magnet, -12%; sham, -4%; P<.05, ANCOVA). For a subset of patients with baseline severe pain, statistically significant reductions occurred from baseline through the fourth month in numbness and tingling (magnet, -32%; sham, -14%; P<.01, ANOVA) and foot pain (magnet, -41%; sham, -21%; P<.01, ANOVA).

Conclusion: Static magnetic fields can penetrate up to 20mm and appear to target the ectopic firing nociceptors in the epidermis and dermis. Analgesic benefits were achieved over time.

Key Words: Diabetic neuropathies; Magnetics; Rehabilitation.

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