

The Effects of Non-Thermal Pulsed Electromagnetic Energy (Diapulse®) on Wound Healing of Pressure Ulcers in Spinal Cord-Injured Patients: A Randomized, Double-Blind Study

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Abstract: Objective: To determine if Diapulse® treatment significantly increases the healing rate of pressure ulcers in patients with spinal cord injuries. Design: Randomized, double-blind study with a follow-up period of 12 weeks or until healed. Setting: Population consisted of volunteers admitted to a Veterans Administration Hospital in New York state over a two year period. Patients: Thirty male spinal cord-injured patients, 20 with stage II and 10 with stage III pressure ulcers. Intervention: Non-thermal, pulsed, high-frequency, electromagnetic energy (Diapulse) treatment for 30 minutes twice daily for 12 weeks or until healed. Main Outcome Measure: Percent of pressure ulcer healed at one week. Results: Of the 20 patients with stage II pressure ulcers, the active Diapulse group had a significantly increased rate of healing with a greater percent of the ulcer healed at one week than the control group (84.0% vs. 40.0%, $P=0.010$). After controlling for the baseline status of the pressure ulcer, active Diapulse treatment was independently associated with a significantly shorter median time to complete healing of the ulcer (13.0 vs. 31.5 days, $p=0.002$). Stage III pressure ulcers healed faster in the Diapulse treatment group but the sample size was limited. Conclusion: For spinal cord-injured men with stage II pressure ulcers, active Diapulse treatment significantly improved healing.

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Introduction

Pressure ulcers and associated complications are major sources of morbidity and mortality among spinal cord-injured (SCI) patients. In addition, acute and chronic osteomyelitis, delayed wound healing, and sepsis all prolong hospitalization. Treatment of pressure ulcers ranges from medical and local treatment to surgical intervention. Recurrences, which may be attributable to diminished tissue resistance to ischemia, are all too frequent and the potential surgical options become limited due to extensive scarring. The current literature lacks well controlled studies proving effectiveness of new types of dressings and pharmacological agents. Based on the understanding that the body is as much

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