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Studies

A Multicenter Study on the Use of Pulsed Low-Intensity Direct Current for Healing Chronic Stage II and Stage III Decubitus Ulcers

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Abstract

Background and Design

Pulsed low-intensity direct current (300 to 600 μ A) has been used in a double-blind placebo multicenter study in the treatment of stage II and stage III chronic decubitus ulcers.

Results

Seventy-four ulcers were treated in four centers. Forty-three patients were selected for the experimental group, and 31 control subjects used the sham instrument (placebo group). In the treated group, 25 ulcers (58%) healed in 8 weeks, whereas in the placebo group, only one ulcer (3%) healed and most ulcers increased in size. Statistical analysis, based on surface area and ulcer depth before and after treatment, showed that lowintensity direct current had a significant influence on the healing rates for these ulcers ($P < .0001$). Experiments with guinea pigs ($n=10$) showed that pulsed low-intensity direct current caused a rapid calcium flux in the epidermis.

Conclusions

Pulsed low-intensity direct current represents a useful approach for the treatment of stage II and stage III chronic decubitus ulcers by increasing the healing rate. The growth of fibroblasts and keratinocytes may be enhanced by pulsed low-intensity direct current due to changes in calcium homeostasis.

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