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Randomized controlled trial of topical hyperbaric oxygen for treatment of diabetic foot ulcers

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The effect of 2 wk of topical hyperbaric oxygen (THO) treatment on the healing of diabetic foot ulcers without associated gangrene was evaluated in a prospective, controlled, and randomized manner in 28 patients. There were 12 patients in the THO group (group 1) and 16 in the control group (group 2). Clinical management of the two patient groups was similar except for THO treatment in the group 1 patients. Clinical parameters, including age, sex, baseline fasting serum glucose levels, duration of diabetes mellitus, duration of foot ulcers, presence of peripheral neuropathy or arterial insufficiency, and evidence of osteomyelitis as determined by radiographs and/or radionuclide scans, were comparable in both groups of patients. No statistical differences (Student's t test) were seen in the number of microorganisms isolated from curettage cultures of the base of the ulcer at days 0, 7, and 14 of the study between groups 1 and 2. In contrast to previous studies, there was a paucity of anaerobic microorganisms isolated from these foot ulcers without associated gangrenous changes. Ulcer areas were estimated by multiplying the maximum width by the maximum length in millimeters at days 0, 7, and 14. Analysis of variance and Student's t test revealed progressive significant reductions in the ulcer areas in both groups when days 0, 7, and 14 were compared and in ulcer depths in both groups when days 0 and 14 were compared. However, such ulcer size changes did not differ statistically between the control and THO groups. A trend toward slower healing was observed in the THO group. Healing of diabetic foot ulcers was not accelerated by THO in this study.

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