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Authors
Fife, Douglas
Behnam, Shahdad
Elkeeb, Laila
et al.

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LED PHOTOMODULATION FOR PREVENTION OF RADIATION DERMATITIS: A PROSPECTIVE, RANDOMIZED, CONTROLLED STUDY

Douglas Fife*, Shahdad Behnam*, Laila Elkeeb*, Arisa Ortiz*, David Rayhan*, Lisa Aquino*, D. Eduardo Roa, Nilam Ramsinghani**, Jeffrey Kuo**, Christopher Zachary*, Kristen M. Kelly***

**Irvine Departments of Dermatology, University of California*
***Radiation Oncology, University of California*

Background and Objectives: Radiation therapy is a mainstay of treatment for breast cancer. Radiation dermatitis (RD) occurs in over 75% of patients, causes significant pain, and may necessitate cessation or delay of treatment. In one study, administration of light emitting diode (LED) photomodulation after each radiation treatment decreased incidence and severity of RD. Our study is the first prospective, randomized, controlled study evaluating LED for prevention of RD.

Study Design/Materials and Methods: 26 post-excision breast cancer patients were randomly assigned to treatment or control groups. Treatment group received LED before and after each radiation treatment with Gentlewaves SelectTM handheld high energy 590 nm array. Seven additional treatments were administered after cessation of radiation. Control group received "sham" treatments (eyes covered, LED held on skin but turned off). All subjects were examined and photographed weekly. Photographs were graded by blinded dermatologists as grade 1 (least severe), grade 2 or grade 3 (most severe).

Results: LED treatment group demonstrated grade 1, 2, and 3 reactions in 14.3% (N ¼ 2), 78.6% (N ¼ 11), and 7.1% (N ¼ 1), respectively. Control group demonstrated grade 1, 2, and 3 reactions in 8.3% (N ¼ 1), 75% (N ¼ 9), and 16.7% (N ¼ 2), respectively. No adverse effects related to LED were noted. One subject had bilateral breast cancer and received LED to right and "sham" treatments to left. Both breasts developed equal grade 2 skin reactions.

Conclusions: We did not demonstrate a reduced incidence or degree of radiation dermatitis when radiation therapy was administered in conjunction with LED. Reasons for lack of demonstrated effect remain to be elucidated.