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Authors
JEFFES, EW
WEINSTEIN, GD
MCCULLOUGH, JL
et al.

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PHOTODYNAMIC THERAPY OF ACTINIC KERATOSES WITH TOPICAL 5-AMINO-
LEVULINIC ACID (ALA) AND VISIBLE RED LIGHT (630 nm). Edward W. Jeffes, Gerald
D. Weinstein, Jerry L. McCullough, J. Stuart Nelson, Nora L. Fong, Allison J.
McCormick, Wendy L. Hoffman, Department of Dermatology and Beckman Laser
Institute, University of California, Irvine, Irvine, California.

The present dose-ranging study investigates the safety, patient tolerance and clinical
efficacy of photodynamic therapy (PDT) using topical ALA and visible red light to treat
actinic keratoses (AKs).

Twenty seven patients with 6 clinically typical AKs were studied. All lesions were
treated with topical ALA (10%, 20% or 30%) emollient cream under occlusion for 3
hours. Immediately prior to PDT, the treatment sites were examined by a UV light for
ALA-induced protoporphyrin IX fluorescence. The sites were then irradiated with 630
nm red light from an argon pumped dye laser at total light dosages ranging from
10–150 J/cm². Assessments for safety, patient tolerance and clinical response were
performed immediately following PDT, at 24 and 72 hours, and at weeks 1, 4, 8 and
16.

Three hours after ALA application, AKs showed moderate red fluorescence. After
treatment with red light, AKs demonstrated cutaneous photosensitivity (localized
erythema and edema), which peaked at 72 hours and was more intense and prolonged
with the higher concentrations of ALA. There was a lesser degree of photosensitization
of the adjacent normal skin. Some patients experienced discomfort during treatment,
which was a function of the concentration of ALA and the intensity of fluorescence.
At 8 weeks following a single treatment using 30% ALA, there was total clearing of
~50% and partial clearing of ~40% of AKs.

The present studies have shown that topical ALA PDT is an effective treatment for
actinic keratoses. The treatment is well tolerated in most patients. Complete clearing
of clinically typical AKs can be achieved with topical ALA and visible red light.