PHOTOTHERAPY, PHOTODYNAMIC THERAPY

PHOTODYNAMIC THERAPY WITH δ-AMINOLEVULINIC ACID AND BLUE LIGHT FOR THE TREATMENT OF ACTINIC CHEILITIS

Joan Paul Paul [1] - Alicia True Dagrosa Dagrosa [2] - Youdinghuan Chen Chen [3] - Pamela Gangar Gangar [4] - Daniel Ressler Ressler [5] - Michael Shane Chapman Chapman [2]

The Permanente Medical Group, Inc., Dermatology, Union City, United States [1] - Dartmouth-hitchcock Medical Center, Dermatology, Lebanon, United States [2] - Dartmouth Geisel School Of Medicine, Institute For Quantitative Biomedical Sciences, Lebanon, United States [3] - University Of Arizona Health Sciences, Pediatrics, Tucson, United States [4] - Dartmouth-hitchcock Medical Center, Clinical Research Unit, Lebanon, United States [5]

Introduction: Actinic cheilitis is a pre-cancerous malformation of the lip caused by ultraviolet radiation. Photodynamic therapy (PDT) is a potential treatment for actinic cheilitis, but controlled clinical trials regarding this treatment are lacking. Topical δ-aminolevulinic acid (ALA) is theorized to selectively target pre-malignant cells. Upon irradiation with a light source, photoactivated porphyrins produce singlet oxygen and other potent oxidizers, resulting in cell death.

Objective: Determine whether the use of PDT with blue light and topical ALA is a safe and effective treatment for actinic cheilitis.

Materials and Methods: We conducted a single center, investigator-initiated, non-randomized, open-label, proof of concept study of topical ALA and blue light for the treatment of actinic cheilitis. Twenty-four subjects with actinic cheilitis were enrolled; 20 of these subjects met inclusion and exclusion criteria. One subject withdrew from the study prior to treatment. The study consisted of a screening visit, one to three scheduled treatments with ALA followed by PDT, and two follow-up visits. The primary outcome was clinical improvement of actinic cheilitis from baseline: no (0%), mild (25%), moderate (50%), marked (75%), or excellent improvement (100%). Post-treatment swelling, vesiculation/pustulation, erosion/ulceration, erythema, flaking/scaling, and crusting were also completed. Subjects completed the Dermatological Life Quality Index questionnaire, subjects' global assessment of improvement and pain level at each visit.

Results: Nineteen subjects completed the study: 84.2% achieved clinical improvement of 75% or better and 26.3% achieved 100% improvement at the end of the study. The subjects' assessment of improvement was notable for 68.4% achieving improvement of

75% or better at the end of the study. Treatments were well tolerated with minimal discomfort. Transient adverse effects (swelling, erythema, and flaking/scaling) were common. Few subjects had vesiculation/pustulation and crusting, but none experienced erosion/ulceration.

Conclusions: Our study supports the use of PDT with topical ALA and blue light for actinic cheilitis.