

PHOTOTHERAPY, PHOTODYNAMIC THERAPY

A COMPARISON OF THE EFFICACY OF ABLATIVE FRACTIONAL LASER-ASSISTED PHOTODYNAMIC THERAPY ACCORDING TO THE DENSITY OF ABLATIVE LASER CHANNEL IN THE TREATMENT OF ACTINIC KERATOSIS

Yeo-rye Cho⁽¹⁾ - Jung-hwan Kim⁽¹⁾ - Ho-jin Kim⁽¹⁾ - Jeong-wan Seo⁽¹⁾ - Ki-ho Kim⁽¹⁾ - Ki-hoon Song⁽²⁾

College Of Medicine, Dong-a University, Department Of Dermatology, Busan, Republic Of Korea⁽¹⁾ - *Skin Cancer Clinic, National Cancer Center*⁽²⁾

Background: Pretreatment with erbium:yttrium-aluminum-garnet ablative fractional laser (AFL) is beneficial when performing photodynamic therapy (PDT) for actinic keratosis (AK).

Objective: This study evaluated whether different laser densities influenced the efficacy, side effects, cosmetic outcomes, and protoporphyrin IX (PPIX) accumulation of AFL-PDT for facial AK.

Methods: In total, 312 AK lesions were randomized to 5.5%, 11%, or 22% AFL channel density groups and treated with one session of PDT after AFL therapy. Treatment efficacy was determined based on the regression of lesions over time; side effects, cosmetic outcomes, and accumulated levels of PPIX were assessed.

Results: Treatment with 22% density was significantly more effective than that with 5.5% density after 12 months (complete response rates: 81.1% vs. 59.1%). The treatment outcome of AK with severe hyperkeratosis was more affected by variations in laser density, with the 22% density group showing a significantly better complete response rate (68.8%) than the 5.5% density group (38.2%). There were no differences in PPIX accumulation, side effects, cosmetic outcomes, and safety.

Limitations: This study is limited by the small sample size and single ethnic group.

Conclusions: AFL-PDT with higher laser density showed a better complete response rate with reduced recurrence, especially in AK with severe hyperkeratosis.

Keywords: laser parameter, laser channel density, ablative factional laser, actinic keratosis, photodynamic therapy





