Efficacy and Safety of Combination 308-nm Excimer Laser and Intralesional Corticosteroid versus Intralesional Corticosteroid Monotherapy in the Treatment of Frontal Fibrosing Alopecia: A Pilot Study

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To the Editor: A standard treatment regimen for frontal fibrosing alopecia (FFA) has not been established.[1] We compared the efficacy and safety of the combination of a 308-nm excimer laser with intralesional corticosteroid (ILC) versus ILC alone to treat FFA.

This was a randomized, controlled, split-scalp pilot study that recruited FFA patients with clinical and/or histopathological manifestations of active disease (burning sensation, pain, redness, scaling, and papules).

Each side of the scalp was randomly assigned to each treatment group. One side received combination therapy of a 308-nm excimer laser (Ra Medical Systems Inc. Carlsbad, CA, USA) and ILC (Triamcinolone, L.B.S. Laboratory Ltd, Bangkok, Thailand), while the other received ILC monotherapy. The treatment lasted 12 weeks, and the results were eventually assessed after 16 weeks. The ILC dosage was 10 mg/ml (0.1 ml/cm^2) monthly. The affected area of the combination-therapy side was additionally treated twice weekly with a 308-nm excimer laser. The initial laser dose was 200 mJ/cm^2; after every second session, it was increased by 50 mJ/cm^2. If patients exhibited a significant adverse reaction (moderate to severe erythema, discomfort, numbness, and/or bullous), the laser dose was reduced by 50 mJ/cm^2 from the previous treatment. During the trial, no oral or topical medications were permitted.

The Frontal Fibrosing Alopecia Severity Index (FFASI) was used to evaluate therapy response at baseline and week 16.[2] Two dermatologists reviewed photographs taken at baseline, weeks 4, 8, 12, and 16 to establish the global improvement score. The patients were also asked to rate the percentage of improvement on each side of their scalp at week 16. During each visit, side effects were noted.

The five FFA patients were all female, with a mean age of 56.2 years. The average disease duration was 6.4 years, with an active disease duration of 13.2 months prior to recruitment. One patient (20%) had FFA confirmed by biopsy. The respective FFASI scores for combination and monotherapy groups were 29.6 ± 5.2 *vs.* 30.0 ± 5.7 at baseline (P = 0.374) and 29.2 ± 5.8 *vs.* 29.6 ± 6.3 at week 16 (P = 0.374). Blinded dermatologists classified two patients (40%) as having minimal improvement (< 25%) on both sides of the scalp at week 16. Regarding patients' assessments, three patients (60%) reported no improvement on either side of the scalp, whereas two patients (40%) reported mild to moderate improvements (10%-40%) with no difference between sides of scalp. The most common side effects from the combination therapy were erythema (60%) and burning sensation (20%). Representative pictures of pre-and post-treatment are shown in Fig 1.

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Received 4 September 2023 Revised 8 October 2023 Accepted 12 October 2023
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https://doi.org/10.33192/smj.v75i11.265185

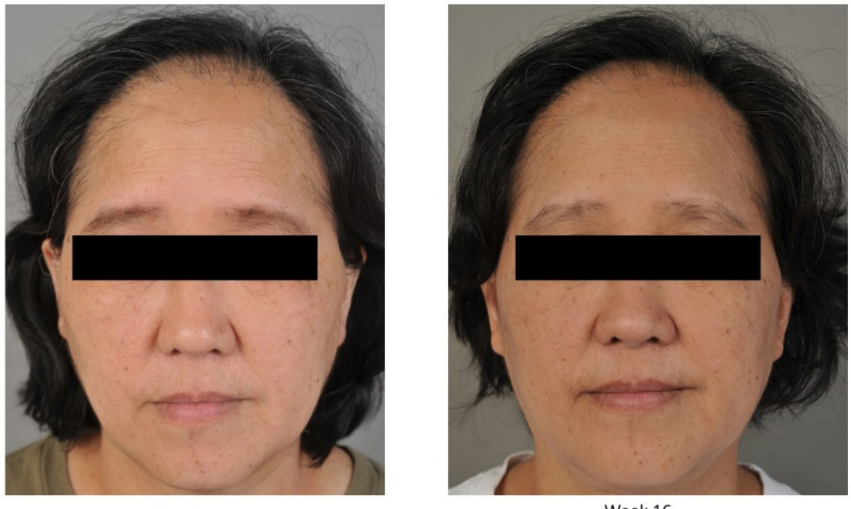

Fig 1. FFA patient who was rated as minimal improvement on both sides by dermatologists. (Right side, ILC alone; left side, combination therapy with 308-nm excimer laser and ILC).

Few studies have been conducted to assess the efficacy of excimer lasers in the treatment of FFA.[3-5] In FFA patients with active disease, Fertig et al. found that oral finasteride combined with an excimer laser successfully reduced inflammation and peripilar casts.[3] Zhang *et al.* reported a 100% treatment response in 3 patients treated with an excimer laser alone.[4] Another study discovered that an excimer laser dramatically reduced scalp inflammation and improved hair loss in 13 patients with lichen planopilaris.[5] The excimer laser's hypothesized mechanism for FFA treatment is to diminish T cells and change cytokine expression throughout the disease's inflammatory process.[5]

Our initial excimer laser dose (200 mJ/cm^2) was lower than that of another study (250 mJ/cm^2). However, our study's mean treatment time (23.4) was longer than the prior study's (11.0), resulting in a greater mean total dosage (11 800 vs. 4300 mJ/cm^2).[5] Nonetheless, our findings show that combining a 308-nm excimer laser with ILC is not superior to ILC alone. The FFASI scores and improvements assessed by physicians and patients in both groups were not substantially different.

The limitation of this study is the small sample size; however, this was a pilot study. Further studies in a larger study population, and with different combinations of laser power, laser frequency, ILC dose, and ILC frequency are needed to evaluate whether there is clinical benefit in treating FFA with an excimer laser and ILC.

In conclusion, the combination of a 308-nm excimer laser with ILC for treating FFA was not superior to ILC alone. Furthermore, the combination group experienced adverse effects (erythema and a burning feeling).

Conflict-of-interest declaration

The authors declare that there are no personal or professional conflicts of interest, and there was no financial support from the companies that produce or distribute the drugs, devices, or materials described in this report.

Funding disclosure

This pilot study was supported by a grant from the Siriraj Research Fund of the Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand (R016132007).

ACKNOWLEDGMENTS

The authors gratefully acknowledge the patients who generously agreed to participate. The authors also thank Assoc. Prof. Chanisada Wongpraparut, Asst. Prof. Supenya Varothai, Assoc. Prof. Narumol Silpa-archa, and Dr. Natchaya Junsuwan for their kind support, and Asst. Prof. Chulaluk Komoltri for assistance with the statistical analyses. The authors are also indebted to Mr. David Park for English-language editing.

Author contribution statement

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Compliance with Ethical Standards

The protocol for this pilot study was approved by the Siriraj Institutional Review Board (COA no. Si 672/2017), and all included patients gave written informed consent to participate.

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