

RESEARCH LETTERS

Low-Dose Excimer 308-nm Laser for Treatment of Lichen Planopilaris

Lichen planopilaris (LPP) is a difficult-to-treat, chronic, inflammatory autoimmune disease targeting the hair follicle that eventually leads to permanent irreversible scarring alopecia.¹ It commonly affects adult women on the central scalp with multifocal patches, perifollicular erythema, hyperkeratosis, and subjective complaints like pruritus or pain.

Recently, a deficiency of the peroxisome proliferator-activated receptor (PPAR) and disturbed lipid metabolism in the pilosebaceous unit² were identified in LPP, with subsequent lymphocyte recruitment and upregulated cytokine expression provoking loss of adhesion of follicular keratinocytes. Based on this finding, treatment with the PPAR agonist pioglitazone was successfully tried in some cases, in addition to other current treatment options such as intralesional steroids, doxycycline, hydroxychloroquine, mycophenolate mofetil.

For chronic inflammation, we hypothesized that UV-B excimer laser treatment might also be effective in LPP, since it has proven beneficial for certain inflammatory skin disorders that are mediated by lymphocytes and are responsive to psoralen plus UV-A therapy.

Methods. Adult patients with biopsy-proven, active LPP unresponsive to conventional therapies like topical corticosteroids were recruited from the hair consultation clinic at the Department of Dermatology, University Hospital of Zurich. Exclusion criteria were photosensitivity disorders, phototoxic drug intake, immunosuppression, and history of cutaneous neoplasia.

The use of monochromatic excimer laser (MEL) was evaluated for the treatment of active LPP. For this purpose, the handheld XTRAC MEL was used (PhotoMedex, Montgomeryville, Pennsylvania). The device delivers a focused beam of monochromatic UV-B light with 30-nanosecond pulses at a repetition rate of 250 Hz produced by xenon chloride at a wavelength of 308 nm, which allows selective treatment of lesional skin, enables higher single doses and fewer treatments, and allows for fewer cumulative doses than are required with standard phototherapy, thus possibly diminishing carcinogenic adverse effects. At baseline before the study and at every visit, clinical examination and photographic documentation were performed to assess erythema, infiltration, hyperkeratosis, and hair growth. Subjective disease severity was evaluated on the basis of patient reports of pruritus and pain.

After determination of the individual minimal erythema dose (MED), radiation was delivered at an initial dose of 1 MED twice weekly up to a total mean dose of 4300 mJ/cm² to one-half of the scalp. The untreated side remained as a control. Subjects received 6 to 16 treatments (11 on average) and weekly assessments that grew gradually less frequent, depending on signs of clearing and/or discomfort.

A paired *t* test was performed to evaluate efficacy of treatment. The protocol was approved by the appropriate institutional review board, and all participants gave written informed consent.

Results. Thirteen patients (11 women), mean (SD) age 64 (10) years, with biopsy-proven active classic LPP or variants (frontal fibrosing alopecia, Lassueur-Graham-Little-Piccardi syndrome, fibrosing alopecia in a pattern distribution, or mixed type) were included in the study. All patients completed the entire study.

Twelve of the 13 patients had erythema before (**Figure, A**) and/or during the study (92%), compared with 7 of

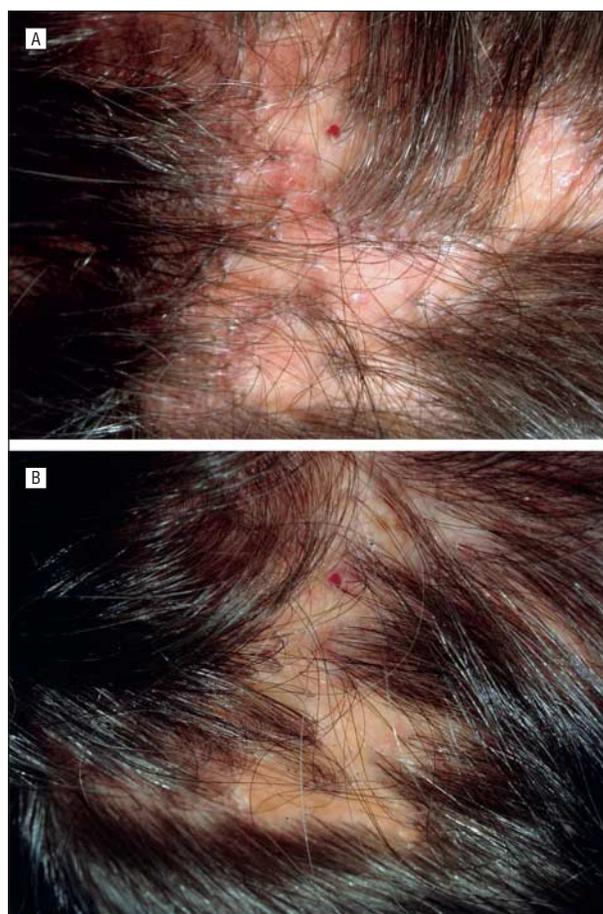


Figure. A 63-year-old woman with lichen planopilaris before (A) and after (B) treatments with monochromatic excimer laser.

13 by the end (54%) (Figure, B) ($P < .008$). Seven patients showed inflammatory lesions that waned after MEL treatment ($P < .003$), and 5 patients had hyperkeratotic lesions that subsequently disappeared ($P < .02$). Three of 13 patients' areas of disease showed decreased infiltration during the study. Six patients reported scalp pain before or during the study, but none by the end ($P < .008$). While 10 of 13 patients reported itching at baseline or during the study, none indicated pruritus by the end of the study ($P < .001$). An increased growth of hair after 4 to 8 weeks was observed in 3 patients, with stable remission in 2. In 1 patient with canities, repigmentation of hair appeared.

Comment. After laser therapy, we found significantly reduced inflammatory activity in our patients, expressed by decreased erythema, pain, pruritus, and hyperkeratosis. The outcome seems to be in agreement with MEL features that cause significant depletion of T cells³ and alterations in cytokine expression.^{4,5} Furthermore, compared with topical therapies that require daily application, a twice-weekly laser regimen showed a greater rate of treatment compliance.

Another new approach, with possibly much lower costs, is treatment with pioglitazones. Controlled trials of PPAR antagonists are ongoing.

Weaknesses of our study include the limited number of patients, an unblinded half-side control, and no distinct control group. Stable hair regrowth was seen in 2 patients, for whom the process of scarring had not reached an irreversible stage. Considering these effects of MEL for active but not end-stage LPP, earlier intervention and improved patient selection and treatment protocol might yield better effects of MEL on hair regrowth. In the future, respawning strategies forming new hair follicles will hopefully complement the choice of therapeutic options for LPP.

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Accepted for Publication: July 7, 2011.

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Author Contributions: Drs Navarini and Trüeb had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Trüeb. *Acquisition of data:* Prinz-Vavricka and Trüeb. *Analysis and interpretation of data:* Navarini, Kolios, Prinz-Vavricka, Haug, and Trüeb. *Drafting of the manuscript:* Navarini, Kolios, Prinz-Vavricka, and Trüeb. *Critical revision of the manuscript for important intellectual content:* Navarini,

Kolios, Prinz-Vavricka, Haug, and Trüeb. *Statistical analysis:* Navarini. *Administrative, technical, and material support:* Navarini, Kolios, Prinz-Vavricka, Haug, and Trüeb. *Study supervision:* Prinz-Vavricka, and Trüeb.

Financial Disclosure: None reported.

Funding/Support: This study was supported by the Department of Dermatology, University Hospital of Zurich.

Previous Presentation: Preliminary results of this study were presented at the 12th Meeting of the European Hair Research Society; June 29 through July 1, 2006; London, England.

Additional Information: Drs Navarini, Kolios, and Prinz-Vavricka contributed equally to this work.

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Cryoimmunotherapy: Superficial Basal Cell Cancer and Squamous Cell Carcinoma In Situ Treated With Liquid Nitrogen Followed by Imiquimod

Superficial basal cell cancer (sBCC) and squamous cell carcinoma in situ (SCCIS) are common skin cancers limited to the epidermis and traditionally treated with liquid nitrogen with success rates of approximately 90%.^{1,2} Other treatments include electrodesiccation and curettage, 5-fluorouracil, topical tretinoin, photodynamic therapy, imiquimod cream, and excision.

In a multicenter study of 169 patients with sBCC treated daily with imiquimod for 6 weeks, high initial (94.1%) and 5-year sustained (85.4%) clearance rates were observed.³ Others report similar findings.⁴ Of 49 patients with SCCIS treated with imiquimod, 5%, cream, 86% had a complete clearance.⁵ Patel et al⁶ report similar results.

Herein, we report the results of a study examining the efficacy of combining liquid nitrogen and imiquimod therapy to treat superficial skin cancers.

Methods. Immunocompetent patients with histologically confirmed sBCC and/or SCCIS who were treated with liquid nitrogen followed by a 6-week course of imiquimod, 5%, cream were eligible for this retrospective study approved by our institutional review board. Only immunocompetent patients with untreated, biopsy-proven sBCC or SCCIS who were observed for a period of 24 months or more were included. Patients were excluded if they (1) could not tolerate the treatment; (2) did not continue follow up for at least 24 months after treatment; or (3) were noncompliant with the regimen. Diagnosis of efficacy of treatment was based on the find-