

Treatment of Inverse Psoriasis with the 308 nm Excimer Laser

ERICK A. MAFONG, MD, PAUL M. FRIEDMAN, MD, ARIELLE N. B. KAUVAR, MD,
LEONARD J. BERNSTEIN, MD, MACRENE ALEXIADES-ARMENAKAS, MD, PHD,
AND ROY G. GERONEMUS, MD

Laser & Skin Surgery Center, New York, New York

BACKGROUND. The treatment of inverse psoriasis can be both challenging and frustrating. Conventional topical and systemic treatments can be limited in terms of efficacy, acceptability and safety. The 308 nm excimer laser has been shown to be effective in the treatment of psoriatic plaques.

METHODS. A patient with chronic inverse psoriasis was treated with 308 nm excimer laser using a 3.5 cm spot, a dosage of 2 minimal erythema doses and a pulse width of 30 ns.

RESULTS. Complete clearance of the psoriatic lesions was obtained after 3 weeks of treatment. Remission duration was at least 6 months.

CONCLUSION. The 308 nm excimer laser is safe and effective for the treatment of inverse psoriasis. Treatments are well tolerated with minimal side effects.

E. A. MAFONG, MD, P. M. FRIEDMAN, MD, A. N. B. KAUVAR, MD, L. J. BERNSTEIN, MD, M. ALEXIADES-ARMENAKAS, MD, PHD, AND R. G. GERONEMUS, MD HAVE INDICATED NO SIGNIFICANT INTEREST WITH COMMERCIAL SUPPORTERS.

Numerous topical and systemic options exist for the treatment of psoriasis, but disease limited to intertriginous areas poses a special therapeutic challenge. The treatments can be inconvenient, impractical, and unpleasant. The clinical response to these treatments is frequently inconsistent and transient. The risks and costs of systemic immunosuppressive, immunomodulatory, and retinoid compounds usually outweigh the benefits for conditions with a limited distribution. Avoidance of retinoids in women of childbearing age is yet another consideration when choosing appropriate therapy. The challenge was to provide a safe, effective, and longer-lasting therapeutic alternative for the treatment of inverse psoriasis in this patient.

Case Report

A 26-year-old Caucasian woman presented with a 1.5-year history of red scaly plaques limited to the axilla, groin, and posterior nuchal areas. She denied any current medications, medical problems, or family history of skin disease. A biopsy obtained at the initial presentation confirmed the diagnosis of inverse psoriasis. The lesions initially responded to treatment with topical corticosteroids (class II), but relapses occurred

off therapy. Other topical treatments such as calcipotriene, tar, and anthralin were not helpful and poorly tolerated. The patient refused oral medications to treat her skin lesions, given the limited extent of her condition. The psoriatic lesions were noted to improve during the summer months and after sun exposure. However, she had never been treated with either phototherapy or photochemotherapy.

The physical examination revealed well-demarcated erythematous scaly plaques measuring 10–12 cm × 6–8 cm located in the axilla, groin, and nuchal areas. No lesions were present on the oral mucosa, elbows, knees, palms, soles, or nails. A potassium hydroxide preparation failed to reveal the presence of fungal hyphae.

The patient had not been treated for 2 months prior to treatment with the 308 nm excimer laser using a 3.5 cm spot size and a pulse width of 30 nsec to the affected areas. The starting dose was obtained by first determining the minimal erythema dose (MED) on an area of unexposed, uninvolved skin. Evaluation was performed at 24 hours. A multiple of 2 MEDs (300 mJ) was administered to the psoriatic plaques in the axilla, groin, and nuchal areas (Figure 1). Two treatments were administered per week with at least 48 hours between each treatment. Improvement in the psoriatic lesions was noted after the first week of therapy. After 3 weeks or six treatments, 90% improvement was observed in the treated areas (Figure 2).

Address correspondence and reprint requests to: Roy G. Geronemus, MD, Laser & Skin Surgery Center, 317 East 34th St., New York, NY 10016.



Figure 1. Inguinal area with erythematous, elevated, psoriatic plaque present at baseline.

The patient noted only a mild sensation of warmth during treatments with the excimer laser. No blistering, hyperpigmentation, excessive erythema, or pain was associated with any of the laser treatments. Six months after the last treatment, the psoriasis had not recurred, despite no further treatment of any kind.

Discussion

The treatment of chronic inverse psoriasis may be difficult due to the side effects associated with the various available topical treatment alternatives, particularly in intertriginous areas. Topical corticosteroids, while initially effective, may lead to atrophy with chronic use. Irritation is a risk when using topical calcipotriene or tazarotene.¹⁻⁴ Topical combination therapies may limit side effects. Broadband ultraviolet (UV) phototherapy is effective for the treatment of psoriasis, but typically requires multiple treatments and several



Figure 2. Inguinal area after treatment with the excimer laser. Almost complete resolution after six treatments.

weeks to obtain clearing.⁵ Appropriate exposure to intertriginous sites may not be technically possible. The most effective spectrum of UVB phototherapy in psoriasis was shown to be between 300 and 313 nm.⁶ This inspired the development of narrowband phototherapy using TL-01 lamps producing 311 nm radiation. Narrowband phototherapy is more effective than broadband in the treatment of psoriasis.⁷⁻⁹ The effect of UV light is thought to produce an immunomodulatory effect on cutaneous inflammatory cells, and perhaps more specifically, trigger T-cell apoptosis.^{10,11} However, while effective, traditional phototherapy exposes uninvolved skin to UV radiation.

Recently the XeCl excimer laser, with an emission spectrum of 308 nm, has demonstrated efficacy in the treatment of psoriasis.¹²⁻¹⁴ A pilot study with 10 patients demonstrated that chronic plaque psoriasis responded after 7-10 treatments. Compared to narrowband phototherapy, fewer treatments and a lower cumulative dose were necessary to obtain clearance.¹² Some patients remained in remission for up to 2 years after the last treatment.¹³

Asawanonda et al.¹⁴ completed a dose-response study using the excimer laser for the treatment of chronic plaque psoriasis. Generally a better response was seen with increased treatment dose and increased treatment frequency. An average of 10 treatments were needed to obtain clearance in psoriatic lesions in a recent multicenter study.¹⁵

The most common side effects encountered with the 308 nm excimer laser are erythema and hyperpigmentation localized to the treated areas.^{15,16} Sometimes patients report the sensation of warmth while the handpiece is administering the radiation. Blistering can occur, particularly at higher doses. In general, these side effects are well tolerated by the patients and are of short duration. The risk of carcinogenesis exists whenever any UV phototherapy is employed. Narrowband phototherapy, however, is considered to be much less carcinogenic than psoralen plus UVA.¹⁰ It is still recommended that patients and clinicians maintain a high level of awareness for the potential development of future cutaneous lesions.

The use of the 308 nm excimer laser for the treatment of inverse psoriasis offers many advantages over the available alternatives. The handpiece interface allows delivery of highly concentrated therapeutic 308 nm laser radiation selectively targeted to psoriatic lesions. These intertriginous areas are not easily treated in a light box. Uninvolved skin is spared exposure to UV radiation. The thinner and smaller plaques of inverse psoriasis may be more sensitive to treatment with the excimer laser. The increased efficacy, need for fewer treatments, and improved safety make this treatment modality especially attractive. Drawbacks to this treatment include the expense, limited availability, and unknown long-term risks.

In conclusion, the 308 nm excimer laser offers an effective, convenient, and well-tolerated alternative for the treatment of inverse psoriasis. Our patient responded extremely well to six treatments with the excimer laser with 6 months of complete remission. Further studies will be useful to determine the long-term safety and efficacy of the excimer laser for the treatment of inverse psoriasis.

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