

LETTERS TO THE EDITOR

Treatment of plaque-type localized scleroderma with retinoic acid and ultraviolet A plus the photosensitizer psoralen: a case series

Editor

Localized scleroderma (LS) can manifest in localized or disseminated indurated plaques limited to the skin. Although photochemotherapy with ultraviolet A plus the photosensitizer psoralen (PUVA) has been used widely in the treatment, there are few reports on the usage of oral retinoic acid in this disease. Retinoic acid and its derivatives lead to an increase in collagen and a decrease in collagenase production.^{1,2} We evaluated the response of the combination of retinoic acid and PUVA (Re-PUVA) treatment in four patients with LS.

The four cases were summarized in Table 1. The diagnosis of all patients was confirmed by the clinical and histologic findings. All cases were evaluated by modified skin score (MSS) described by Zachariae *et al.* before and after the treatment by the same author (MÖ).³

During the first 2 weeks, patients received 1 mg/kg body weight per day acitretin. From the third week,

patients received concomitant PUVA therapy. The initial UVA doses were established by skin typing (1–1.5 J/cm²). The dosage increments were applied every other week with a 20% Acitretin, and PUVA treatment was applied for 12 weeks. Then, maintenance PUVA treatment was given twice or once per week for 3 months. The sign of improvement was defined as loss of induration and erythema in the lesions, which was noted before the treatment. Follow-up has varied from 4 to 16 months after tapering the treatment.

Except for cutaneo-mucosal side-effects (all cases), joint and muscle pain (cases 2 and 4) and mild elevation of triglyceride (case 2), other side-effects were not recorded. Nausea was recorded as a complaint in the first 2 weeks of the treatment in the case 4 due to 8-methoxypsoralen. In case 2, a bulla occurred in an indurated patch on the right lumbar area on the fifth week of treatment. This bulla may occur by Re-PUVA. All erythematous patches healed completely in all cases, but some indurated patches did not heal in three cases. An indurated patch on the medial aspect of the bilateral femoral (case 1) and the periumbilical region (cases 3 and 4) did not recover. However, decreased ability to pinch or move skin was detected in these indurated patches (figs 1 and 2).

Table 1 Clinical findings and response to acitretin-PUVA treatment in the patients

Case no.	Age (year)/ weight (kg)	Sex/skin type	Clinical findings	Disease duration	Symptoms	MSS before treatment	MSS after treatment	No. of PUVA exposures	Total UVA dose (J/cm ²)
1	31/62	F/III	Atrophic patches, trunk and limbs; erythematous patches, lower extremities; all indurated and some them hyper or hypopigmented	11 years	Pruritus, tightness of skin and pigment alteration	17	3	72	405.5
2	57/65	F/III	Atrophic and erythematous patches, trunk and lower extremities; some of them indurated		Pruritus	10	2	57	242
3	45/47	F/IV	Hyperpigmented, erythematous and indurated patches, trunk and limbs	10 months	Cosmetic disturbance and tightness of skin	12	3	62	284.4
4	56/60	F/III	Atrophic, erythematous and indurated patches, trunk and limbs; some of them hyperpigmented	4 months	Tightness of skin and pruritus	24	5	70	367

Abbreviation: F, female.



fig. 1 Atrophic plaques on the scapular regions before the treatment in case 2.



fig. 2 Significant decreased wrinkles and the brightness on the atrophic plaques on the scapular regions after the treatment in case 2.

PUVA, PUVA-cream and UVA1 therapy is used widely in the treatment of LS.^{4–6} We used combination of a higher dose of acitretin and PUVA in four patients with LS. About 90% to 100% softening in the erythematous indurated plaques has been achieved in this treatment. Anti-fibrotic effects of UVA have been associated with a reduction of dermal decorin levels and of connective tissue growth factor and with reduced synthesis of procollagen. It also induced the expression of collagenase-1 (matrix metalloproteinase-1).⁷ In addition to the immunomodulation effects, retinoic acid produces a thickening of the epidermis and leads to a new collagen deposition in the dermis via trophic effects on dermal fibroblasts.⁸ However, we do not yet know which effects of these treatments are more important than the other in LS treatment.

Re-PUVA treatment may decrease the potential side-effects of UVA such as chronic actinic damage and carcinogenesis and contribute to remodeling of dermal collagen in both active and inactive lesions of LS. In addition, the combination enhances efficacy and limits the treatment frequency, duration and cumulative doses. This study is a small case series on Re-PUVA without comparing it with PUVA alone. However, further comparative studies are required to clarify the efficacy of this treatment approach. We suggest that Re-PUVA treatment may be a good treatment choice for atrophic and fibrotic plaques in LS.

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