The efficacy of photochemotherapy in Sri Lankan patients with vitiligo

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Abstract

Introduction: Photochemotherapy (PUVA) is one of the commonly used treatments for vitiligo.

Objective: To evaluate the efficacy of photochemotherapy in Sri Lankan patients with extensive and/or recalcitrant vitiligo.

Setting: Phototherapy Unit, National Hospital of Sri Lanka.

Methods: Vitiligo patients having >5% body surface area (BSA) involvement and/or refractory to other therapies, who attended our clinic during April – September 2006, were included in a prospective study. The percentage BSA involved was calculated using the palm of the hand (equivalent to 1%). The degree of depigmentation was determined using Vitiligo Area and Severity Scoring Index (VASI) visual scale.

Patients were irradiated with ultraviolet A using Waldmann UV 7001 K phototherapy unit 2 hours after ingesting 8-methoxypsoralen 0.5 mg/kg. Patients received PUVA twice a week, gradually increasing the UVA dose from 0.5 J/cm^2 up to a maximum of 6 J/cm^2.

Response was evaluated at the end of 16, 24 and 32 sessions. VASI scores were calculated at the baseline and end of treatment.

Results: 12 patients (8 females), aged 28 – 58 years, with skin involvement ranging from 1.0 – 17.7% (mean 7.7± SD 5.8) were included.

At the end of 32 sessions, 10 patients (83%) had developed repigmentation, amounting to 2.5 – 21% (mean 11.1 ± SD 7) improvement in VASI relative to the baseline. The face and arms responded best. Hands and feet were relatively resistant to therapy.

Nausea, erythema, irritation and hyperpigmentation were the common adverse effects reported. One patient had developed cataract.

Conclusion: Photochemotherapy is effective in initiating pigmentation in vitiligo patients with type IV – V skin. Its long-term efficacy and safety need to be determined.

Introduction

Vitiligo is a common acquired melanocytopenic disorder with potential biological, social and psychological consequences for the affected. Its aetiology is still obscure, but may involve hereditary factors, autoimmunity, neurologic factors, toxic metabolites, and lack of melanocyte growth factors[1].

Treatment of vitiligo is difficult. Although several medical and surgical therapies exist none is uniformly effective. The results vary widely depending on the clinical presentation, age, affected anatomical area, extent of lesions, duration, and racial factors[2,3,4].

Systemic photochemotherapy with oral psoralens plus ultraviolet A (PUVA) is one of the most commonly used, well-established treatments in extensive vitiligo. In ancient Egypt, vitiligo lesions were treated with extracts of the *Ammi maius* plant followed by exposure to the sun[5]. This principle forms the basis of photochemotherapy or PUVA therapy, whereby lesions are irradiated with UVA 2 hours after oral administration of 8-methoxypsoralen, a photosensitizer. Narrow band UVB therapy has been reported to be also effective[6], with the advantage of eliminating the need for a systemic photosensitizer.

Vitiligo Area and Severity Scoring Index (VASI) is a recently introduced parametric assessment tool that allows quantitative evaluation of vitiligo treatment[7]. The first step in VASI is to divide the patient into various body regions such as the face, upper extremities (excluding hands), trunk, lower extremities (excluding feet), hands and feet. Then, using the assumption that the palm of the hand is equivalent to 1% of the body surface, the physician determines area of the skin affected by vitiligo. Next, the physician determines what percentage of the affected skin in each area is depigmented by referring to a visual scale (Figure 1). For each area VASI is determined by the product of area of vitiligo in hand units and the extent of depigmentation in each hand unit-measured patch. The total body VASI is calculated by summation of the values for all the regions (possible range 0-100).

Phototherapy has been used in the treatment of extensive and recalcitrant vitiligo in Sri Lanka in recent years but reports on its efficacy and safety in Sri Lankan patients are lacking.

The objective of the present study was to evaluate the efficacy of photochemotherapy in patients with widespread and/or recalcitrant vitiligo attending the phototherapy unit at National Hospital of Sri Lanka.

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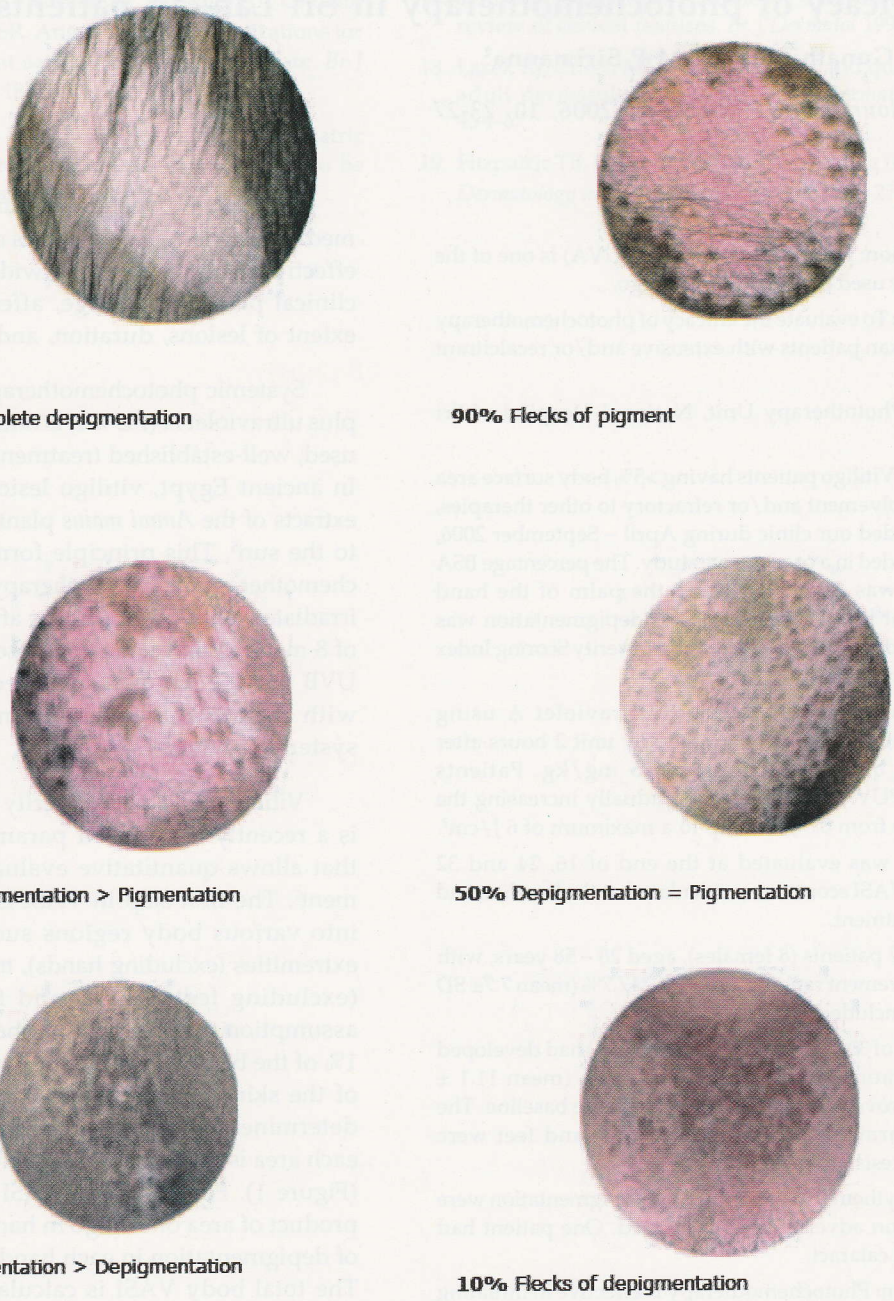

Figure 1. *VASI visual scale for estimating the degree of depigmentation.*

Methods

Vitiligo patients having >5% body surface area (BSA) involvement and/or refractory to other therapies, who attended our clinic during April – September 2006, were included in a prospective study. Initial evaluation included clinical examination, formal eye assessment, hepatic transaminases and antinuclear factor. Patients with contraindications for phototherapy were excluded. Informed written consent was obtained before starting treatment.

The extent of skin involvement was determined using the palm of the hand, assumed to be equivalent to 1% of body surface area. The degree of depigmentation was evaluated using the Vitiligo Area and Severity Scoring Index (VASI) visual scale[7]. Baseline VASI scores were calculated for 6 body regions, namely the face, upper extremities (excluding hands), hands, trunk, lower extremities (excluding feet) and the feet.

All patients were given a basic introduction to phototherapy equipment and safety procedures. The

need for skin and eye protection for next 18-24 hours after PUVA during daylight was reinforced. Patients ingested 8-Methoxypsoralen 0.5 mg/kg 2 hours prior to phototherapy. A bland emollient was applied on the lesions before phototherapy. In males genitalia were covered. Protective goggles were worn by all patients when inside the phototherapy unit. Patients were irradiated with ultraviolet A using Waldmann UV 7001K phototherapy unit. The initial dose of UVA light was 0.5 J/cm^2 for all vitiligo patients. Patients attended phototherapy 2 days a week. The UVA dose was increased by 0.5 J/cm^2 until it was tolerated by the patient, up to a maximum of 6 J/cm^2.

Patients were examined for the extent and degree of repigmentation, appearance of new lesions and/or extension of existing lesions, stability of repigmented areas and adverse effects at the end of 16, 24 and 32 sessions of photochemotherapy. VASI scores for the 6 areas were calculated at the end of treatment.

Results

12 patients, 8 females and 4 males, aged 28-58 years (mean 43.2 years), were included. The duration of vitiligo ranged from 1 month to 30 years. The extent of skin involvement ranged 1.0 – 17.7% (mean 7.7 ± SD 5.8). There were 4 patients with acrofacial vitiligo. Two patients had been treated with Sol-PUVA previously, and one patient with narrowband UVB, without clinical improvement.

Repigmentation was observed in 9 patients (75%) at the end of 24 sessions, and in 10 patients (83%) at the end of 32 sessions. Initial repigmentation was noted as flecks of pigment at the margins and around hair follicles (Figure 2). The number of islands continued to increase, and pigment spread was noted, with further photochemotherapy. The mean cumulative UVA dose used was 96.2 (± SD 26) J/cm^2. The 2 non-responders quitted the study after 3 months.

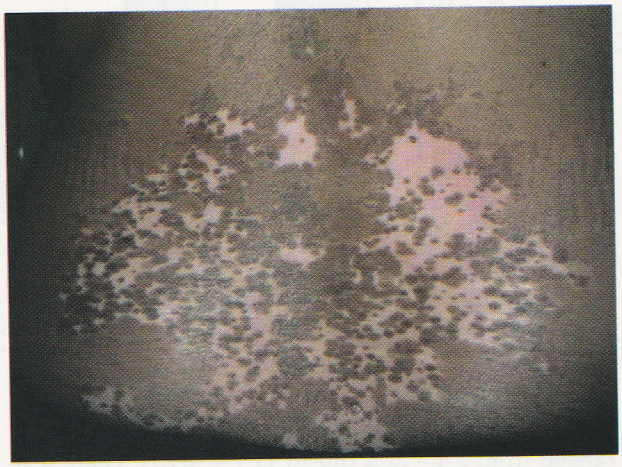

Figure 2. *Islands of marginal and perifollicular repigmentation after photochemotherapy.*

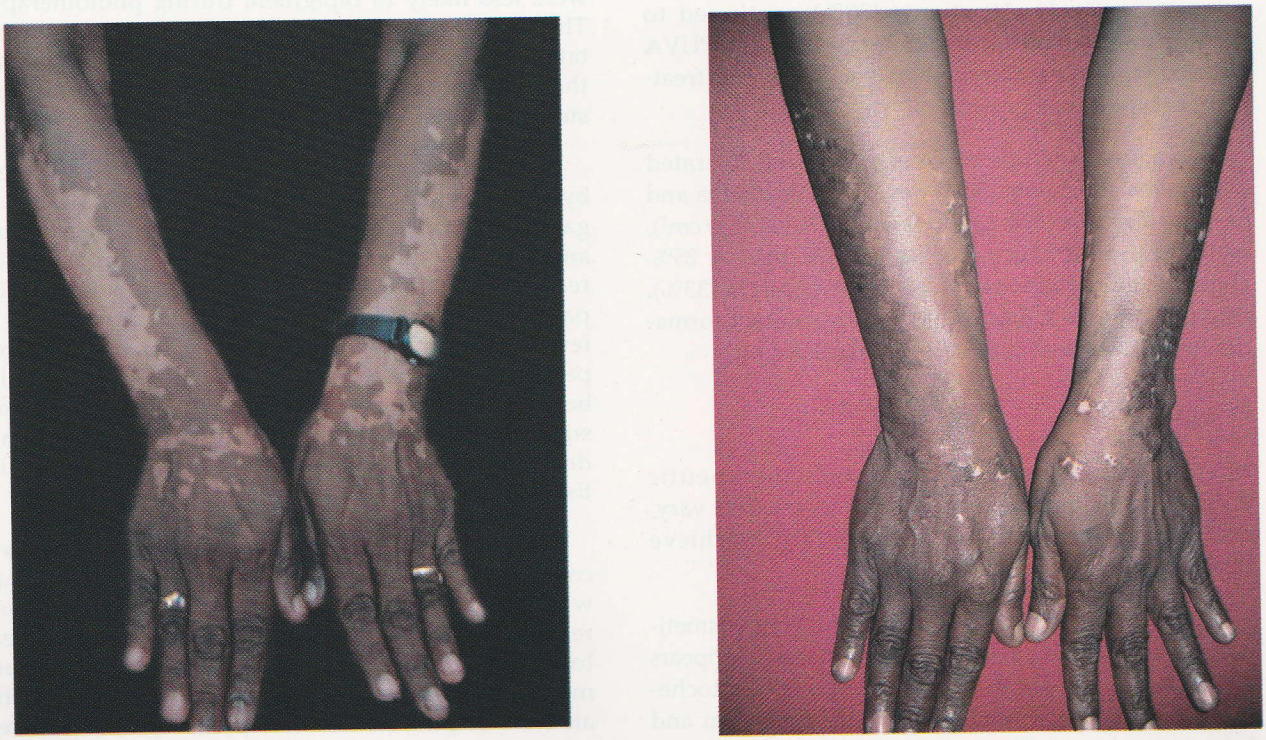

Figure 3. *Vitiligo lesions before (left) and after (right) photochemotherapy.*

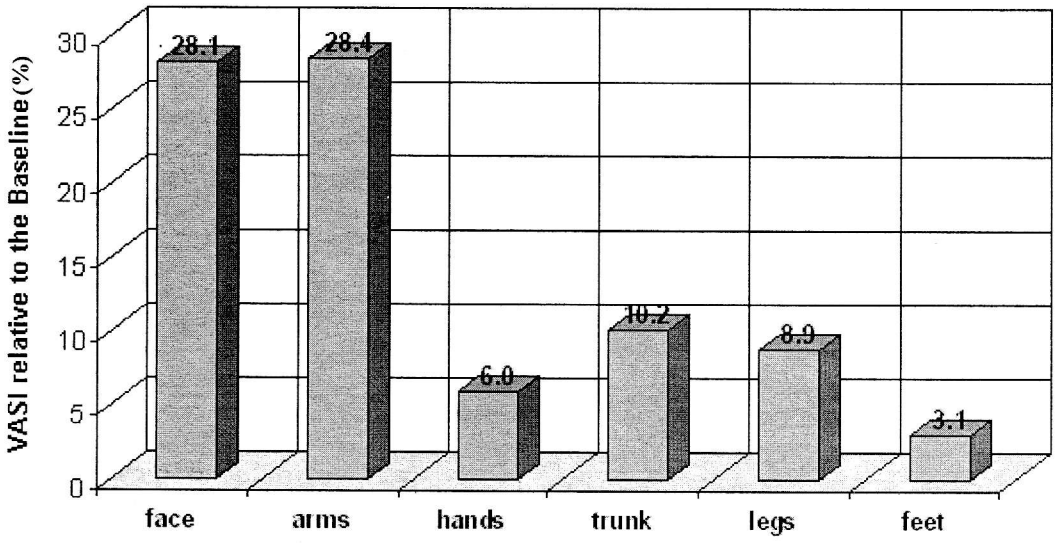

Figure 4. *Relative reduction in VASI by body site after 32 sessions of PUVA.*

The extent of repigmentation after 32 sessions ranged from 2.5 – 21% (mean 11.1 ± SD 7). There was a statistically significant improvement in VASI scores relative to the baseline (p=0.005). Lesions on the upper extremities and the face responded best (28% improvement in each), followed by the trunk (10%) and lower extremities (9%). Hands and feet were relatively resistant to treatment, showing 6% and 3% repigmentation rates respectively. 4 patients (33%) continued to develop new vitiligo lesions while on treatment. PUVA induced repigmentation remained stable during treatment except in one patient.

Initial nausea was universal and well tolerated by patients. 6 patients (50%) developed erythema and burning sensation at high doses of UVA (4 – 6 J/cm^2), which improved after reducing the UV dose by 25%. Hyperpigmentation was noted in 4 patients (33%). One patient was found to have early cataract formation on subsequent ophthalmic examination.

Discussion

Despite the availability of various therapeutic modalities for treatment of vitiligo, their effect vary, and a large percentage of patients fail to achieve satisfactory results.

One of the best methods for achieving cosmetically acceptable repigmentation of affected skin appears to be local or systemic PUVA. However, photochemotherapy is not without the risk of short-term and long-term adverse effects.

Our results indicate that photochemotherapy is effective in initiating pigmentation in vitiligo patients with type IV – V skin. However the therapeutic effect may take 3 – 4 months to appear as shown in this study. It is believed that patients with skin type IV – VI skin do better than those with paler skin[3]. Best response rates were observed on upper extremities and the face. As it has been reported previously[8], hands and feet were less likely to repigment during phototherapy. The perifollicular and marginal pattern of repigmentation observed is reported to be more stable than the usual diffuse depigmentation pattern induced by steroids[9].

Photochemotherapy appeared to be well tolerated by the patients. Short-term adverse effects such as gastrointestinal disturbances, erythema, irritation, and hyperpigmentation, though common, did not require discontinuation of therapy. One out of the 12 patients was found to have developed cataract after a few months, highlighting the need for baseline and periodic opthalmological assessment. Patients should be counseled on possible long-term complications such as cataract formation, premature aging, and development of actinic keratoses and skin cancers in the years to come.

To what extent photochemotherapy will achieve cosmetically acceptable pigmentation in our patients with prolonged treatment (e.g. 100 – 150 sessions) remains to be determined. Future studies will also need to look at the relapse rates after discontinuing the treatment, long-term adverse effects, and the cost-benefit analysis of photochemotherapy compared to other treatment modalities.

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