PUVA Therapy for Psoriasis

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Twenty three patients of psoriasis were treated with thrice weekly PUVA therapy. Complete clearing of the disease was seen in 20/23 patients (87%). On the average, a patient required 25 exposures, cumulative dose of 137 J/cm^2 and 8.5 weeks for clearance. The treatment was discontinued in three patients due to worsening of the disease. After clearing of the disease, 18 patients (90%) received maintenance therapy, which was then tapered off. Only 8 patients relapsed after 6 months of stoppage of the treatment. The most common side effect noted was nausea (30%), followed by pruritus (23%), erythema (13%), headache (7%), Koebner's phenomenon (5%) and blister formation (4%).

Key Words:

PUVA therapy is the combined use of photosensitizing chemical compounds (psoralens) and ultraviolet A radiation (UVA=320-400 nm) to induce a therapeutically beneficial result not produced by either alone[1]. Psoralens and sunlight have been used by Egyptians and Indians for hundreds of years for treating vitiligo[2]. In 1974, Parrish et al[3] reported successful treatment of psoriasis with PUVA therapy. In 1982, Food and Drug Administration Authority of the United States of America approved the use of PUVA treatment in the management of severe psoriasis[4]. Since that time, PUVA has gained popularity world-wide for the treatment of psoriasis. However, sufficient studies have not been done in our country to assess the efficacy and safety of PUVA therapy. The present study was conducted to evaluate PUVA therapy in our patients of psoriasis.

Material and Methods

Twenty-three patients of psoriasis, fourteen male and nine female, 20 to 50 years of age, were randomly selected from the Department of Dermatology, Mayo Hospital Lahore, for this study. The average duration of the disease was 10 years (1-20 years). Plaque type of psoriasis was present in 18 (78%) patients, guttate type in 2 (9%), erythrodermic in 2 (9 %) and pustular in 1 (4.5%) patient. All the patients were diagnosed clinically. However, in some of the patients diagnosis was confirmed by biopsy. Patients with history of allergic reactions to psoralens, photosensitivity, severe cardiovascular, renal or hepatic disease and aphakia were excluded from the study. Pregnant and lactating women and children were also not included. Laboratory investigations including complete blood examination, liver function tests blood urea and serum creatinine were done before, during and after the treatment.

Treatment was given three times a week. Patients were exposed to artificial UVA light two hours after oral intake of 8-methoxypsoralen (8-MOP) in a dose of 0.6 mg/kg/body weight. Initial UVA dose was given according to the skin type (Table 1). Depending upon the response of the disease and erythema produced, UVA dose was gradually increased. The patients were instructed to wear UV blocking sunglasses during and after the treatment for 8 hours and to avoid going out in the sun. All the patients were followed up regularly for response and side effects.

Treatment cubicle was upright, the patients being treated from all sides in the standing position. The cubicle was six sided, without any roof and having twenty-six UVA-F85/100 w tubes, mounted vertically side by side. For proper dosimetry, irradiance (mw/cm^2) was checked from time to time with the help of a photometer.

The treatment was divided into clearance and maintenance phases. The last effective UVA dose in the clearance phase was used for maintenance therapy. In the maintenance phase, frequency of PUVA therapy was once weekly for four weeks, after which it was reduced to once every fortnight for one to two months.

Results

In the clearance phase, complete clearing was seen in 20/23 patients (87%). On the average, a patient required 25 exposures, cumulative dose of 137 J/cm^2 and 8.5 weeks for clearance. The treatment was discontinued in three patients due to worsening of the disease.

During the clearance phase, erythrodermic psoriasis required more treatments as compared to plaque type. The lesions on the trunk responded earlier than lesions on the extremities and extra therapy was given for the acral areas. After clearing of the disease, 18 patients (90%) received maintenance therapy, which was then tapered off. Only 8 (40%) patients relapsed after 6 months of stoppage of the treatment.

The most common side effect noted was nausea (30%), followed by pruritus (23%), erythema (13%), headache (7%), Koebner's phenomenon (5%) and blister formation (4%).

Among chronic side effects, only generalized hyperpigmentation (80%), nail pigmentation (30%) and xerosis (80%) were observed. No significant changes were found in the laboratory tests.

Discussion

Psoriasis is a disorder of epidermal cell proliferation of unknown etiology characterized by scaly erythematous

plaques that may involve any skin area, including scalp and nails. Therapy of psoriasis depends on the location, type and severity of the disease. Topical medications include tars, anthralin, topical steroids, vitamin D3 analogs and retinoids. Commonly used systemic therapies are methotrexate, retinoids, cyclosporin[5] and PUVA[6]. Because PUVA is less toxic and economical as compared to others modalities, it is increasingly used for the treatment of widespread disease. In the present study, 87% complete clearing of the disease was seen in 8.5 weeks with an average of 25 exposures and a cumulative UVA dose of 137 J/cm^2. These results are comparable with many of the previous studies (Table 2). In a multi-centric study by Henseler et al[7], 3175 patients with severe psoriasis were treated. Marked improvement was seen in 89% patients. An average of 20 exposures and a cumulative dose of 96 J/cm^2 were required for clearing. In another clinical trial by Honigsmann et al[8] ,1308 patients with extensive psoriasis were treated. Eighty eight percent clearance in an average duration of 12.7 weeks and a total UVA cumulative dose of 249 J/cm^2. Zaki[9] noted complete clearing in 20/22 (90%) patients. An average of 29 exposures and a cumulative dose of 386 J/cm^2 . In the present study, cumulative UVA dose was much lower than that reported by Honigsmann et al[8] and Zaki[9] and slightly higher than that seen by Henseler et al[7]. This could be due to the difference of protocols and variable response of the disease in different ethnic groups.

The antipsoriatic effect of PUVA has been attributed to blockage of cell proliferation as a result of the psoralen covalently binding to DNA under the influence of UVA[10]. Alterations in the immune system caused by UVA therapy may also play a role[11].

Table 1. Skin Types

Skin type (Joules/cm^2)	Initial history	Starting UVA dose
I	Always burn, never tan	0.5
II	Always burn, sometime tan	1
III	Sometime burns, always tan	1.5
IV	Never burn, always tan	2
V	Moderately pigmented	2.5
VI	Negroid	3

Erythrodermic skin is to be classified as skin type I for determination of UVA dose.

Though PUVA is effective, it is not without side effects. The acute side effects can be managed by proper administration of the drug and dosimetery. Taking the psoralens with food or milk can minimize nausea. Oral antihistamines or bland emollients can treat pruritus.

The long-term side effects may include an increased risk of squamous cell carcinoma[12], accelerated skin ageing[13] and ophthalmic abnormalities[14]. Predisposing factors to the development of squamous cell carcinoma include light skin colour, a previous history of cutaneous malignancy, treatment with ionizing radiation, arsenic and nitrogen mustard. Although increased risk of malignancy appears to be quite small, proper selection of the patients, limiting the cumulative UVA dose, using PUVA in combination with other therapies and regular follow-up of the treated patients is nevertheless required.

Table 2 Comparison with Other Studies

Clinical data	Henseler et al[7]	Honigsmann et al[8]	Zaki[9]	Ours
No. of patients	3175	1308	22	23
Complete clearing	89%	88%	90%	87%
Treatment duration(weeks)	5.3	12.7	10	8.5
Average no. of sessions	20	25	29	25
Total UVA dose (J/cm^2)	96	249	386	137

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