PHOTOCHEMOTHERAPY FOR PSORIASIS

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Summary

Results of treatment of fifty psoriatic patients with psoralen and ultraviolet radiation are reported. A detailed analysis of the data is also given. None of the patients was resistant to treatment. Complete clearing of all lesions occurred in 22% of the patients in 16 days, in 96% of the patients in 40 days and in 100% of the patients in 45 days It is concluded that photochemotherapy with psoralen and ultraviolet radiation from conventional u v. radiation therapy lamps is a safe and effective treatment for patients with psoriasis in this country.

Psoriasis a disease of unknown aetiology affects 1–3% of the world population. Because of lack of satisfactory treatment the disease is known to cause tremendous disability to the patient. Goeckerman[1] introduced tar and ultravoilet radiation therapy for psoriasis with good results. Tar contains photosensitisers like anthracene, acridine, carbazole and phenanthrene and the benificial effects are suggested to be due to some photochemical reaction. Recent studies have shown that therapy with psoralens and ultravoilet radiation gives sinificantly better results[2,3]. Since such studies have been conducted moslty in fair skinned population of the western countries, data about the efficacy of photochemotherapy in this country is lacking. Obtaining such data is the main purpose of the present study. In an attempt to gain insight into the mechanism of this therapy a detailed analysis of the data is also given.

Methods

Seventy psoriatic patients were treated by photochemotherapy. None of these patients received any topical or systemic drugs for over a month. Twenty patients discontinued the treatment with varying degrees of improvement and were not evaluated. Of the remaining fifty patients, twenty six were males and twenty four females. Their ages ranged from 6 to 60 years with a mean of 28 ± 12 S.D. years. Patients were graded according to the extent of skin involvement. Grade 1 patients had less than ten lesions. Grade 2 patients had more than ten lesions distributed over one or more limbs or trunk. In Grade 3, lesions were present on all four limbs and trunk. Patients with psoriatic erythroderma were placed in Grade 4. Fifty mg of psoralen (trade name Manaderm), a naturally occurring furocoumarin from the plant Psoralea corylifolia, was administered to the patients daily

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Received for publication on 13–6–1977

(except sundays) 2 h prior to irradiation with u.v. light. Since sophisticated high intensity u.v. radiation chambers were not available, conventional u.v. radiation therapy lamps (Phillip Bio-Sal and Hanau G.E.S.) were used as the radiation sources. The lamp was kept at a distance of 10 cm from the patient and duration of exposure was 10 minutes. The number of days needed for complete clearing of all lesions were recorded. Paired comparision studies have shown that exposure to u.v. radiation alone is much less effective than photochemotherapy with psoralens[3]. It was therefore thought unnecessary to repeat such a comparative study. Correlation was estimated from the Karl Pearson coefficient of correlation at 0.05 level of significance.

Results

The time required for complete clearing of all lesions in the 50 patients was on an average 25 ± 9.4 S.D. days. No significant difference was noted in the time required for complete clearing of lesions in 26 females (25 ± 9 S. D. days) as compared to the 24 males (25. 2 ± 10 S. D. days). ($P > 0.1$, students t test). No correlation was found between the time taken for complete clearing of the lesions and the age of the patients (corr. coeff. 0.07, $P > 0.05$), the duration of the disease (corr. coeff. 0.26, $P > 0.05$), or the grade of skin involvement (corr. coeff. 0.07, $P > 0.05$). Five females and 2 males developed local erythema of varying degrees necessitating discontinuation of therapy for few days but no subsequent erythema developed in any of these patients. One patient developed gastric irritation which was controlled with antacids. No other side effects were noted except varying degrees of pigmentation on the exposed sites in almost all the subjects.

Discussion

The results of the therapy are shown in table 1. Complete clearing of all lesions was noted in 16, 40 and 45 days in 22%, 96% and 100% of the patients

TABLE I

Duration of treatment required for complete clearing of lesions in patients with psoriasis.

Duration of trert-ment given (days)	No. of patients with complete clearing of lesions during the period given in column 1.	% of total 50 patients treated
8 — 16	11	22
17 — 24	10	20
25 — 32	14	28
33 — 40	13	26
41 — 45	2	4
Mean duration ± S. D. 25 ± 9.4*	Total 50	Total 100 %

* Mean ± S. D calculated from data presented as discrete series in table 2.

TABLE 2

Record of persons daily cleared of lesions on various days of treatment with psoralen and U. V. radiation.

Days of treatment	No of persons cured of lesions on that day	Total % of patients cleared of lesions
8	2	4
10	1	6
11	2	10
14	3	16
15	3	22
16	3	28
17	2	32
19	1	34
20	2	38
22	1	40
23	1	42
25	2	46
26	2	50
27	2	54
28	2	58
29	2	62
30	4	70
32	2	74
34	4	82
35	2	86
36	1	88
37	3	94
38	1	96
40	1	98
45	1	100

respectively. Table 2 shows the number of patients cleared daily of all lesions on various days of therapy. An analysis of the data in table 2 shows that till the 8th day complete clearing of the lesions did not occur in any patient. From the 8th day to the 45th day of therapy when the study was terminated, the number of persons daily cleared of all lesions remained remarkably constant i. e. the data is uniformly distributed and free from any clustering. Fig. 1. is a graph of

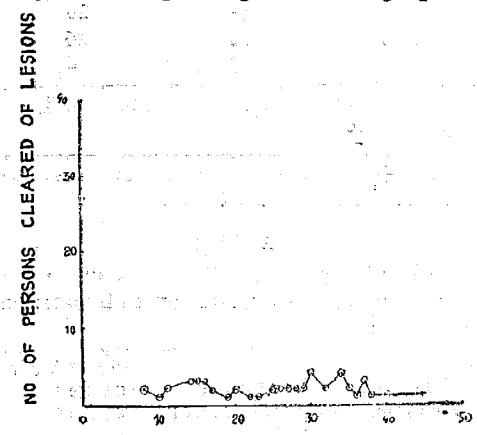

FIG. NO 1

persons cleared daily of all lesions on various days of therapy. The graph is a nearly horizontal line with no marked peaks. These datas clearly show that patients with psoriasis can not be divided into two sharply demarcated groups, one with a rapid and the other with a delayed response to the therapy. Interestingly, similar statistical distribution would result if the therapy were most effective only during a certain period of time when the dividing cells were most susceptible to it. The exact mechanism responsible for clearing of lesions with psoralen and ultraviolet radiation remains to be elucidated. Cole[4] and Dall'Acqua et al[5] have shown that psoralen in the presence of u. v. radiation can form monofunctional and bifunctional adducts with D. N. A. Further studies are needed to work out the exact mechanism responsible for clearing of lesions by photochemotherapy with psoralen.

To conclude, our studies show that photochemotherapy with psoralen and u. v. radiation, delivered by conventional u. v. radiation therapy lamps, is an effective and safe treatment for patients with psoriasis in this country. Nevertheless, in view of the known harmful effects of u. v. radiation on eyes, the routine precaution of shielding the eyes of the patients from u. v. radiation during photochemotherapy must always be observed.

Acknowledgments

Our sincere thanks are due to Mr. Chaman Lal Dhar for typing the manuscript.

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