SUN SCREENING EFFECT OF PARA AMINO BENZOIC ACID GIVEN ORALLY AND ITS ROLE IN THE TREATMENT OF HYPERPIGMENTED PATCHES ON FACE

By

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In our earlier paper (Mulay and Ahuja, 1967) we had discussed the effect of para-amino-benzoic acid given orally on the hyperpigmented patches on face. We had conjectured that para-amino-benzoic acid (PABA) given orally acts as a photoscreening agent just as it acts as a photoscreening agent applied locally. We, therefore, tried to assess the photoscreening effect of PABA given orally by calculating the increase in the minimum erythema dose (MED) of U. V. R.

MATERIAL AND METHOD

We took 34 patients regardless of the disease they were suffering from and we gave PABA (0.5 G tablet) 2 tablets twice a day after meals. The MED was established before the treatment was started for each patient and subsequently the MED of UVR was ascertained every 15 days for a period of eight weeks. The patients were instructed not to take other known photosensitising drugs like sulphonamides, tetracyclines, phenergan or other phenothiazine group of drugs.

We used a UVR machine where voltage could be kept constant and the range of UVR was from 360-370 mu. The distance from the tube was kept constant. The exposures were given on the forearm and the site was changed for every subsequent exposure to avoid error caused by pigmentation and hyperkeratosis as a result of prior exposure. Subsequently, we took another group of 17 cases suffering from hyperpigmented patches on face and repeated the study by maintaining the schedule of determining the MED before and after treatment and also the dosage of PABA and cases were observed for a period of 2½ months i. e. 15 days more than the 1st group and the clinical improvement in hyperpigmentation was also simultaneously observed. 3 cases discontinued before full period of observation and are thus excluded. Another UVR machine of the same variety was used for this group of cases.

So the presented work is on two groups of cases :

Group I Determination on MED in 34 cases before and after PABA administration for 2 months regardless of the disease.

Group II of 14 cases-Determination of MED before and after PABA administra tion for 2½ months along with the clinical improvement observed in hyperpigmentation during this period.

OBSERVATION AND RESULTS

The MED prior to the administration of the drug varied from 2-7 minutes in the 34 cases under study. The MED was 3-4 minutes in 28 cases and above 4 minutes in 3 cases and below 3 minutes in 3 cases before the start of treatment.

Receive for Publication on 1-2-1969.

In the subsequent readings we found that there was a progressive increase in the MED by ½ to 1½ minutes. The difference between the MED prior to treatment and the last reading at the end of 2 months was very significant and in the majority of cases it was twice as much. In 24 cases the increase in the MED was 3–4 minutes, in 4 cases it was 3 minutes and in 2 cases it was above 4 minutes. Four patients had discontinued the treatment after their 3rd reading (i. e. 1½ month) but also had shown significant increase by 3–4 minutes in 3 cases and less than 3 minutes in one case.

Table I

M. E. D. for 34 cases (one case discontionued after 1st reading)

S. No.	MED before treatment	MED after 2 months treatment	Increase in minutes in MED after 2 months	Percentage increase in MED
1.	4	—	—	—
2.	2	5	3	150
3.	4	6½	2½	62.5
4.	5	9	4	80
5.	3½	6	2½	71.3
6.	3	5½	2½	83.3
7.	3	5	2	66.6
8.	2	5	3	150
9.	3	7	4	133.3
10.	7	10	3	42.9
11.	4	8	4	100
12.	2	5	3	150
13.	4	7	3	75
14.	3	6	3	100
15.	3	6	3	100
16.	4	7	3	75
17.	5	8	3	60
18.	4	8	4	100
19.	4	8	4	100
20.	4	8	4	100
21.	4	7½	3½	70
22.	4	8½	4½	87.5
23.	5	7	2	40
24.	3	7	4	133.3
25.	4	9½	5½	137.5
26.	4	8	4	100
27.	4	7	3	75
28.	4	8	4	100
29.	3	7	4	133.3
30.	4	8	4	100
31.	3	6	3	100
32.	3	6	3	100
33.	4	6	2	50
34.	3	6	3	100
35.	3	6	3	100

Table II

Percentage increase in M. E. D.

	40-49%	50-74%	75-99%	Above 100%
Number of cases	2	6	6	20
Percentage of total cases :	5.8	17.5	17.5	58 8

Out of 34 cases, we found that in every case there was increase in the MED of UVR. The increase was observed consistantly at subsequent exposures every 15th day. The MED in four representative group of cases are shown in the following graph.

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In group II the MED prior to the administration of the drug varied from 3–12 minutes in the 14 cases and the MED was 3–9 minutes in 9 cases and more than 9 minuts in 5 cases. The variation in the MED as compared to the previous group of 2-7 minutes may have been on account of the difference in the power of the two machines.

The subsequent readings showed a progressive increase in MED by I to 2 minutes and the difference between the MED prior to treatment and the last reading at the end of $2\frac{1}{2}$ months was again quite significant and the increase in MED time was between 3–7 minutes (Table I).

Table III

S. No.	Pre-treatment M. E. D.	Post treatment MED after $2\frac{1}{2}$ months	Increase in MED after $2\frac{1}{2}$ months	Percentage increase in M. E. D.
1.	10	15	5	50
2.	7	12	5	71.4
3.	9	13	4	44.4
4.	10	15	5	50
5	6	12	6	100
6.	4	7	3	75
7.	7	12	5	71.4
8.	12	17	5	25
9.	11	18	7	63.6
10.	13	17	4	30.7
11.	4	8	4	100
12.	3	8	5	166
13.	4	8	4	100
15.	3	7	4	133.3

Group II Table IV.

Percentage increase in MED of 14 cases of Hyperpigmented Patches

	Below 40%	40–49%	50–74%	75–99%	Above 100%
Number of cases	2	1	5	1	5
Percentage of total cases (Group II)	14.2	7.1	35.7	7.1	35.7

Table V

Percentage improvement on clinical observation in Hyperpigmented Patches.

	Less than 25%	25 to 49%	50 to 74%	75 to 100%
Number of cases	1	4	7	2
Percentage of total cases	7.1	28.5	50	14.2

Table IV shows the percentage increase in MED of the 14 cases of Hyperpigmentation.

Table V shows the rate and percentage of clinical improvement in hyperpigmented lesions observed during the $2\frac{1}{2}$ months period of PABA administred in the 2nd group of 14 cases. The results are comparable favourably with the results of improvement reported in our earlier paper (1967).

DISCUSSION

The role of PABA given orally in preventing Actinic type of hyperpigmented patches on face was discussed in our last paper (Mulay and Ahuja, 1967).

The PABA solutions 5–10% in 75% alcohol was recommended by Shaw (1946) in preventing sun burns. Rothman and Heningsen demonstrated that a 15% PABA cream application increased the MED of UVR by using mercury are lamp to 50–100 times.

We have tried to demonstrate that PABA given orally could substantially increase the MED from 50–150% of the original Baseline MED in 8 weeks time and we feel that it is a safer sunscreening agent without producing any side effects and can be given for a longer period. We have administered PABA by mouth to our patients for 9 months to a year and have not encountered any serious side effects. Hence it could be used in diseases like DLE. The hazards of using chloroquin for long time have been now widely known and hence PABA could substitute antimalarial drugs in the treatment of DLE.

We are now giving 0.5 G. tablets of PABA (2 tablets 3 times a day) to some of our patients with DLE and the results will be reported at a future date.

Our study in group II besides confirming the findings in the Ist group of PABA being a photoscreening agent given orally further also confirms our results of improvement after PABA administered orally in hyperpigmented patches on face.

SUMMARY

We have presented a study on 34 cases who were administered PABA orally and showed consistant increase in the MED of UVR.

PABA given orally is a safer and effective sun screening agent. PABA given orally is an effective mode of treating actinic hyperpigmented patches of face.

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