

Nevus Spilus-like Hyperpigmentation in Psoriatic Lesions during PUVA Therapy

Svein Helland and Gisle Bang

*Department of Dermatology and Department of
Pathology, Haukeland sykehus, Bergen, Norway*

Received April 23, 1979

Abstract. Three patients with psoriasis who developed nevus spilus-like hyperpigmentation during PUVA therapy are described. Histological studies of skin biopsies revealed no increase in the number of melanocytes or any sign of malignancy. The need for follow-up studies is stressed.

Key words: Nevus spilus; Psoriasis; PUVA treatment

Photochemotherapy of psoriasis with oral 8-methoxypsoralen and long-wave ultraviolet light



Fig. 1. Nevus spilus-like hyperpigmentation in a hypopigmented area of earlier psoriatic plaque during PUVA treatment (case 1).

(PUVA) was introduced in 1974 (6). Recently nevus spilus-like pigmentation has been reported in areas of psoriatic lesions during PUVA therapy (4).

Nevus spilus may be defined as a patch of melanization with spots of still darker hyperpigmentation (3).

At the Department of Dermatology, Haukeland Hospital, PUVA therapy (PUVA 4000, Waldmann, Stuttgart) has been used for 3 years following established guidelines with exact dosimetry. So far 204 patients have received this treatment. Three patients have developed nevus spilus-like hyperpigmentation in earlier psoriatic lesions.

CASE REPORTS

Case 1. A 57-year-old man with a refractory psoriasis since 1953. In 1977, PUVA therapy was started. After 20 PUVA treatments (a total dose of 48 J/cm²), nevus spilus-like hyperpigmentation developed in earlier psoriatic lesions on elbows, knees, legs and wrists (Fig. 1). The degree of pigmentation varied. A biopsy sample was taken from affected skin and the PUVA treatment terminated. Histological examination showed hyperorthokeratosis, hyperpigmentation in the basal layer of the epidermis and perivascular lymphocytic infiltration in the connective tissue (Fig. 2). There was no increase in the number of melanocytes and no sign of malignancy. Two months later his psoriasis had almost completely cleared. The nevus spilus-like hyperpigmentation was reduced both in number and in colour intensity. After a further 2 months the hyperpigmented lesions on the legs still persisted, while lesions elsewhere had disappeared.

Case 2. A 72-year-old woman with a 59-year history of generalized psoriasis vulgaris. In May 1978 PUVA therapy was started. After 2 months she had received 36 treatments (a total dose of 97 J/cm²). Nevus spilus-like hyperpigmentation was seen on both wrists and elbows at the site of earlier psoriatic lesions. Histological studies of biopsy specimens showed changes similar to those described in case 1. The PUVA therapy was continued. The nevus spilus-like hyperpigmentation has remained unchanged and no further pigmentation has developed.

Case 3. A 39-year-old man with psoriasis vulgaris since 1974. He had been treated with Methotrexate® twice, with satisfactory results. After a severe exacerbation, PUVA therapy was started in 1976 resulting in complete remission during maintenance therapy. After 124 treatments (a total dose of 626 J/cm²) he developed dark brown nevus spilus-like hyperpigmentation localized to the extremities and the trunk. The changes were especially prominent in the groins. The skin biopsy showed hyperparakeratosis, hyperorthokeratosis and an abundance of melanin pigment, both in the basal layer and in the stratum spinosum (Fig. 3). A few melanocytes were seen, but no atypical cellular changes. The patient has been kept in remission by maintenance therapy and thanks to this no further nevus spilus-like hyperpigmentation has developed.

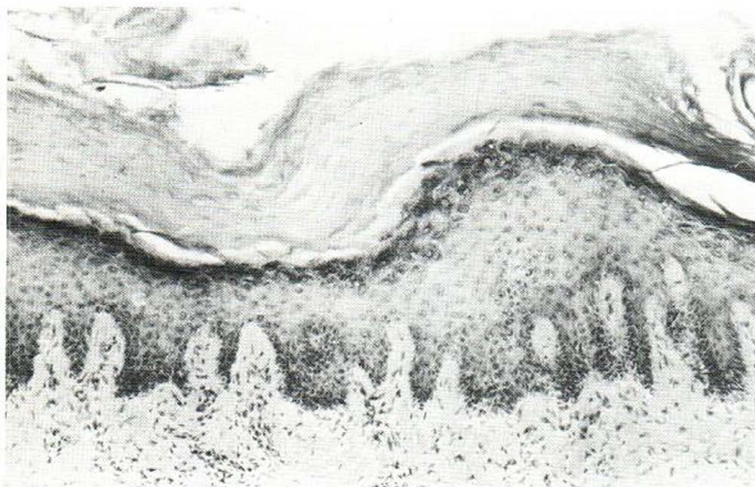


Fig. 2. Histology of nevus spilus-like lesions at the site of an earlier psoriatic plaque during PUVA treatment (case 1, Fig. 1). There is hyperorthokeratosis, hyperpigmentation in the basal layer of the epidermis and slight perivascular lymphocytic infiltration in the connective tissue. H & E, $\times 90$.

DISCUSSION

In addition to complete clearing of the psoriatic lesions in about 76.4% of patients (5), most achieved an even tan as a welcome side effect.

Both during the initial phase of PUVA therapy and later, Braun-Falco et al. (2) reported an increase in melanocytes in the epidermis of non-lesional and lesional skin. The melanocytes were characterized as especially active cells with a relatively high mitotic activity. An increase in the number of melanin granules in the basal layer of the epidermis was also registered, but no precancerous changes. Except for the increase in number of melanocytes this is in keeping with our findings. In addition our patients developed nevus spilus-like

pigmentation in areas of earlier psoriatic lesions. This has also been reported earlier (1, 4) and five other cases have been observed in Scandinavia (personal communication). Furthermore, nevus spilus-like hyperpigmentation has been described in connection with climate therapy and after using conventional Ingram technique (7). The significance of these findings is uncertain and although no cellular atypia is evident in the cases described here, close follow-up is warranted.

REFERENCES

1. Bleeher, S. S.: Freckles induced by PUVA treatment. *Br J Dermatol* 99, Suppl. 16: 20, 1978.
2. Braun-Falco, O., Hofmann, C. & Plewig, G.: Fein-

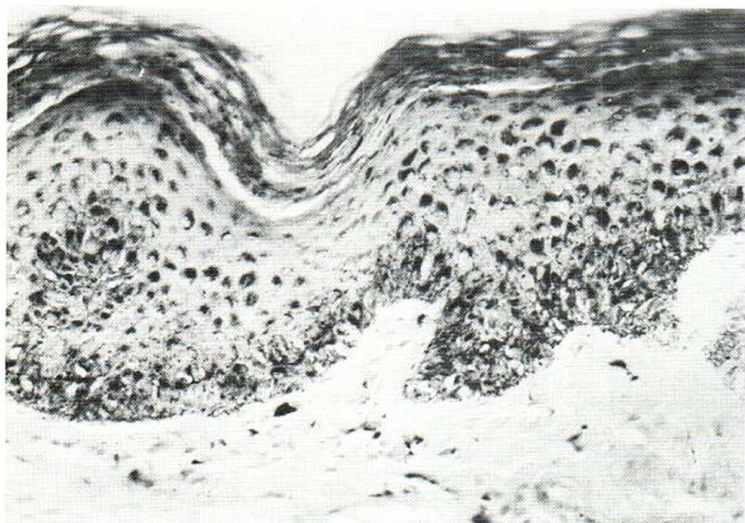


Fig. 3. Histology of a nevus spilus-like lesion in an area of earlier psoriatic plaque during PUVA treatment (case 3). Hyperparakeratosis, hyperorthokeratosis and an abundance of melanin pigment both in the basal layer and in the stratum spinosum are visible. A few melanocytes are present, but no sign of atypical cellular changes.

- gewebliche Veränderungen unter Photochemotherapie der Psoriasis. *Arch Dermatol Res* 257: 307, 1977.
3. Cohen, H. J., Minkin, W. & Frank, S. B.: Nevus spilus. *Arch Dermatol* 102: 433, 1970.
 4. Hofmann, C., Plewig, G. & Braun-Falco, O.: Ungewöhnliche Nebenwirkungen bei oraler Photochemotherapie (PUVA-Therapie) der Psoriasis. *Hautarzt* 28: 583, 1977.
 5. Nilsen, A.: Fotokjemisk behandling av psoriasis. *Tidsskr Nor Lægeforen* 5: 266, 1978.
 6. Parrish, J. A., Fitzpatrick, T. B., Tanenbaum, L. & Pathak, M. A.: Photochemotherapy of psoriasis with oral methoxsalen and longwave ultraviolet light. *N Engl J Med* 291: 1207, 1974.
 7. Skogh, M. & Moi, H.: Naevus spilus-artige Hyperpigmentierungen bei Psoriasis. *Hautarzt* 29: 607, 1978.

Reduction by Oral Tetracycline of Lipolysis of Triglycerides in Hair Lipid

D. A. Shaw and E. Grosshans¹

Unilever Research, Unilever Limited, Isleworth TW7 5AB, England, and ¹Clinique Dermatologique, Hôpital Civil de Strasbourg, 67005 Strasbourg Cedex, France

Received May 9, 1979

Abstract. Oral tetracycline hydrochloride (Amphocycline®) reduced significantly ($P < 0.05$) the mean free fatty acid/triglyceride (FFA/TG) ratio in hair lipid, from 1.56 to 0.47 after treatment for 4 weeks, and to 0.64 after treatment for 8 weeks in 15 young men and women undergoing treatment for acne vulgaris. In a second similar group of 16 subjects who received the same oral therapy with antibiotic but who also applied a 10% (w/v) solution of ethyl lactate twice daily to affected areas on the face, the mean FFA/TG ratio was also reduced significantly ($P < 0.05$) from 1.25 to 0.61 (after 4 weeks) and to 0.64 (after 8 weeks). In a third group of 16 subjects, whose only treatment was local application of ethyl lactate solution, the mean FFA/TG ratio was essentially unchanged throughout the period of treatment from 1.15, being 1.50 and 1.22 after 4 weeks and 8 weeks, respectively.

Key words: Oral tetracycline; Acne vulgaris; Hair lipid lipolysis

Skin surface lipid usually contains a substantial proportion of free fatty acids (FFA) which are formed by the action of bacterial lipases on sebum triglycerides (TG) (8). Drugs of the tetracycline group, which are widely used for the treatment of

acne vulgaris, are known to reduce this lipolysis either by direct inhibition of the lipases or by inhibition of the growth of the lipase-producing bacteria, or by a combination of both actions (2). Substantial reduction of lipolysis may be achieved after systemic therapy for 4 weeks (6).

The findings were reported recently of a clinical trial comparing the efficacy of local application of a 10% (w/v) solution of ethyl lactate with that of oral tetracycline in the therapy of acne vulgaris (5). In the course of this trial, hair samples were collected in order to assess the effects of oral tetracycline on the chemical composition of hair lipid. This report presents the findings of the study on hair lipid composition. It is shown for the first time that oral tetracycline causes a reduction of lipolysis of hair lipid TG similar to its inhibitory effect on lipolysis of TG in facial skin surface lipid.

MATERIALS AND METHODS

Clinical. 20 males and 24 females, age range 14 to 30 years (mean 19.0), out of 49 subjects completed the trial. The subjects were assigned to three treatment groups. One group received oral tetracycline (Amphocycline®, E. R. Squibb) and applied a 10% (w/v) solution of ethyl lactate in a water-ethanol-propylene glycol vehicle to acne-affected areas on the face. A second group received oral tetracycline and applied a placebo lotion (solvent-mixture vehicle). The third group used local application of the ethyl lactate solution. The daily dosage of tetracycline was 1.5 g during the first week, reducing to 0.5 g in the second and third week, and finally to 0.25 g from the fourth to the eighth week, inclusive. Throughout the trial the subjects used only the commercial shampoo supplied for washing the hair. The subjects were requested to avoid the use of other hair products or treatments for the duration of the trial.

Analytical. Three hair samples (each c. 100 mg) were collected from each subject during attendance at the clinic. The first was collected on the day the trial began, the second after 4 weeks and the third at the end of the trial (8 weeks). The hair samples were stored at room temperature until analysis, which was between 1 and 2 weeks after collection. Hair lipids were extracted with diethyl ether at room temperature and quantified by charring an aliquot part in conc. sulphuric acid at 200°C in order that suitable amounts could be taken for thin-layer chromatography on silica gel (9). FFA and TG were assayed by scanning transmission densitometry using a Chromascan Mark II (Joyce, Loeb and Co. Ltd., Gateshead-on-Tyne, England) after spraying the developed plates with 20% (w/v) aq. ammonium hydrogen sulphate and heating at 180°C for 60 min. Because the charring intensities per unit weight of FFA and TG differ considerably, appropriate corrections must be made to convert peak areas from the densitometer traces to weights of FFA and TG. Standard curves of amounts of