be due to the fact that patients attribute little importance to light anomalies when asymptomatic, as in one of our cases. This association between FFD and Turner syndrome may be casual, but it could also be hypothesized that the peculiar genetic condition of Turner syndrome and the particular hormonal alterations may make Turner patients favourable to FFD. In fact, elevated follicle stimulating and luteinizing hormone levels are frequently present in patients with Turner syndrome because of their insufficient sexual hormone levels. Follicle-stimulating hormone has been considered an aetiological factor in FFD (5, 6). In addition, our two patients had been treated with growth hormone alone or in combination with sexual hormones.

REFERENCES

1. Fox GH, Fordyce JA. Two cases of a rare papular disease affecting the axillary region. J Cut Dis 1902; 20: 1 – 5.
2. Shelley WB, Levy EJ. Apocrine sweat retention in man. II. Fox-Fordyce disease (apocrine miliaria). Arch Dermatol 1956; 73: 38 – 49.
3. Ranaletta M, Rositto A, Drut R. Fox-Fordyce disease in two prepubertal girls: histopathologic demonstration of eccrine sweat gland involvement. Pediatr Dermatol 1996; 4: 294 – 297.
4. Miller M, Harford RR, Yeager JK. Fox-Fordyce disease treated with topical clindamycin solution. Arch Dermatol 1995; 131: 1112 – 1113.
5. Giacobetti R, Caro WA, Roehigk HH. Fox-Fordyce disease. Control with tretinoin cream. Arch Dermatol 1979; 115: 1365 – 1366.
6. Effendy I, Ossowski B, Happle R. Fox-Fordyce disease in a male patient: response to oral retinoid treatment. Clin Exp Dermatol 1994; 19: 67 – 69.
7. Graham JH, Shafer JC, Helwig EB. Fox-Fordyce disease in male identical twins. Arch Dermatol 1960; 82: 104 – 113.

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Successful Treatment of Generalized Granuloma Annulare with Polyethylene Sheet Bath PUVA

Sir,

PUVA therapy is known to be a successful mode of treatment for a number of inflammatory dermatoses, including psoriasis, atopic dermatitis, mycosis fungoides, and for generalized granuloma annulare (GA) (1). The usual oral administration of 8-methoxypsoralen (8-MOP) is associated with side-effects on the internal organs and eyes (2). As an alternative, attention has recently been focused on the delivery of 8-MOP via the patient's bath water, since this treatment modality enhances the efficacy and safety of the standard PUVA technique (3, 4). The main drawback of bath PUVA is the high cost of liquid 8-MOP preparation. The use of a polyethylene sheet to reduce the volume of bath water can reduce the cost of the treatment by 90% (5). We describe a patient with generalized GA who was successfully treated with polyethylene sheet bath PUVA.

CASE REPORT

A 50-year-old man had an asymptomatic papular eruption for 18 months. It began on the trunk and gradually spread to the extremities and became generalized. His general health was good and his personal and family history was unremarkable. Examination revealed numerous, arcuate red-purple papules varying from 3 mm to 7 mm in diameter. The papules were solitary or coalesced and distributed over the trunk and extremities (Fig. 1). The scalp, palmar and plantar surfaces were not involved. He had a type III skin.

The results of routine laboratory studies were within normal values (complete blood count, erythrocyte sedimentation rate, serum glucose, ions, liver enzymes, C-reactive protein, antistreptolysin-O-titre and urinalysis). Chest X-ray and abdominal ultrasound were also normal. Histological examination of an excised papule showed circumscribed necrobiotic foci of degenerated collagen fibres in the upper dermis, surrounded by palisading inflammatory cells. The infiltrate consisted mainly of histiocytes and a mixture of monocytes, foreign-body type giant cells, some lymphocytes and fibroblasts. The diagnosis of general-

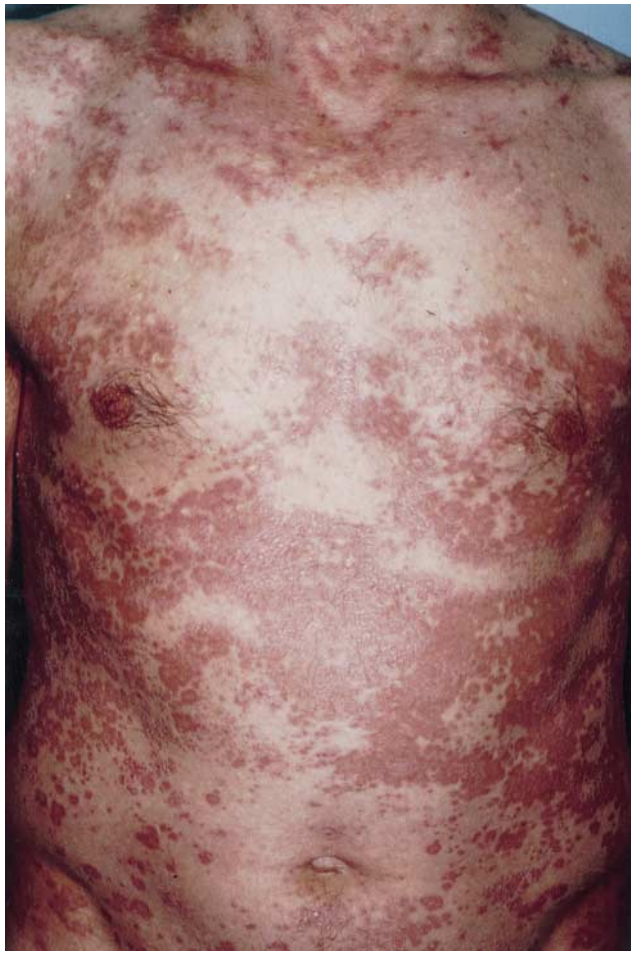

Fig. 1. The patient's trunk showing generalized GA. Note the widespread arcuate red-purple papules varying from 3 mm to 7 mm in diameter.

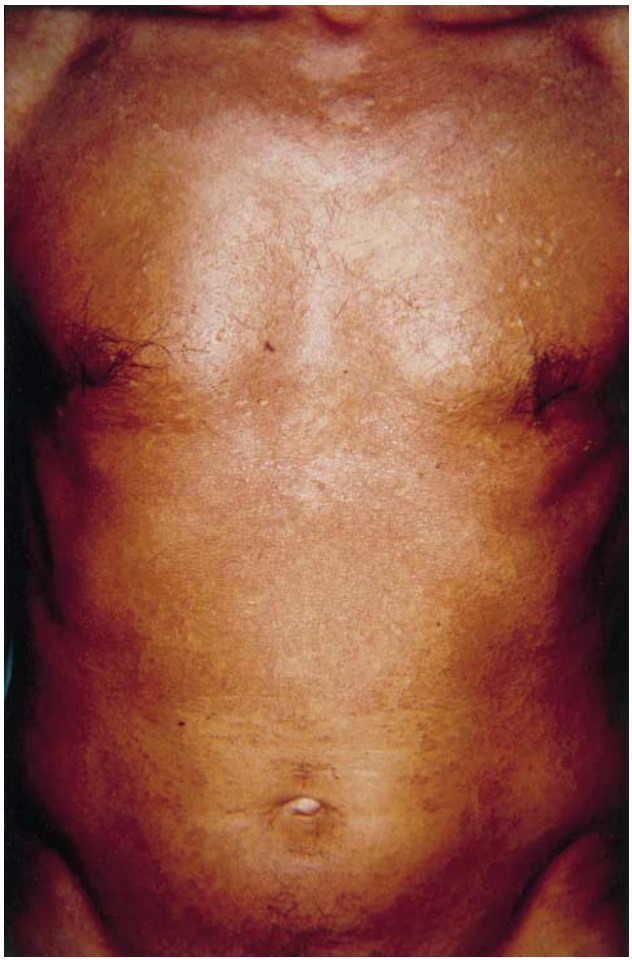

Fig. 2. The patient's lesions resolved after bath PUVA treatment.

ized GA was established on the basis of the characteristic clinical manifestation and histology.

Polyethylene sheet bath PUVA therapy was initiated 4 times weekly. A volume of 10 l psoralen (concentration 1 mg 8-MOP/l) was used in a 20-min bath. UVA irradiation was performed immediately afterwards with a Waldmann 7001 (Waldmann Medical, Villingen-Schwenningen, Germany), followed by a shower to remove the 8-MOP from the skin surface. The initial UVA dose was 0.5 J/cm^2, the cumulative UVA dose was 35 J/cm^2 and the number of treatments was 15. At the end of the treatment the patient's lesions resolved with only post-inflammatory hyperpigmentation remaining (Fig. 2). He has been symptom-free for 6 months.

DISCUSSION

GA is a benign cutaneous disorder that has no proven aetiology or widely accepted theory of pathogenesis (6). The localized form of GA is usually self-limiting, but in generalized GA spontaneous resolution is less common. A large and varied number of therapeutic modalities have been used in the treatment of generalized GA, such as oral steroids, chloroquine, potassium iodide, niacinamide, cyclosporin, pentoxifylline, dapsone, retinoids and oral PUVA (1, 6). Since in the study of Kerker et al. (1) oral PUVA therapy of GA patients required long-term treatment and therefore carried the potential side-effects of prolonged UVA exposure, such as non-melanoma skin cancer, we used bath PUVA treatment. In the treatment of psoriasis, bath PUVA results in a significant reduction in the cumulative UVA dose, lowers the numbers of exposures and avoids short-, as well as long-term side-effects on the internal organs and eyes (3, 7, 8). Furthermore, bath PUVA eliminates the risk of intra-individual variations in 8-MOP plasma levels associated with the gastrointestinal absorption of oral 8-MOP (9). The main disadvantage of bath PUVA is that liquid 8-MOP preparation is expensive, but the use of the sheet bath method reduces the volume of bath water, and the total amount of 8-MOP per bath, thereby reducing the cost (5). Our patient had generalized GA, clinically and histologically, and we successfully used the sheet bath PUVA method, which indicates that it offers a good treatment modality in this disorder.

REFERENCES

1. Kerker BJ, Huang CP, Morison WL. Photochemotherapy of generalized granuloma annulare. Arch Dermatol 1990; 126: 359 – 360.
2. Henseler T, Wolff K, Hönigsmann H, Christophers E. Oral 8-methoxypsoralen photochemotherapy of psoriasis. The European PUVA study: a cooperative study among 18 European centers. Lancet 1981; 1: 853 – 857.
3. Lowe NJ, Weingarten D, Bourget T, Moy LS. PUVA therapy for psoriasis: comparison of oral and bath-water delivery of 8-methoxypsoralen. J Am Acad Dermatol 1986; 14: 754 – 760.
4. Calzavara-Pinton PG, Ortel B, Hönigsmann H, Zane C, De Panfilis G. Safety and effectiveness of an aggressive bath-PUVA regimen in the treatment of psoriasis. Dermatology 1994; 189: 256 – 259.
5. Streit V, Wiedow O, Christophers E. Treatment of psoriasis with polyethylene sheet bath PUVA. J Am Acad Dermatol 1996; 35: 208 – 210.
6. Smith MD, Downie JB, DiCostanzo D. Granuloma annulare. Int J Dermatol 1997; 36: 326 – 333.
7. Collins P, Rogers S. Bath-water delivery of 8-methoxypsoralen therapy for psoriasis. Br J Dermatol 1992; 127: 392 – 395.
8. Lüftl M, Degitz K, Plewig G, Röcken M. Psoralen bath plus UV-A therapy. Possibilities and limitations. Arch Dermatol 1997; 133: 1597 – 1603.
9. Schafer-Korting M, Korting HC. Intraindividual variations of 8-methoxypsoralen plasma levels. Arch Dermatol Res 1982; 272: 1 – 7.

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