UVA1 for Hypereosinophilic Syndrome

Sir,

Hypereosinophilic syndrome (HES) is a multiple system disease, in which persistent eosinophilia of unknown origin is associated with organ involvement (1,2). Polymorphous skin manifestations are frequently seen and may be the only clinical manifestation of HES in an otherwise asymptomatic patient (3, 4). Tissue damage in the affected organs results from eosinophil products released such as eosinophilic cationic protein (ECP). Lowering the number of eosinophils is the mainstay of therapeutic interventions using corticosteroids or immunomodulating agents (2–4). High doses of long-wave ultraviolet A radiation (high-dose UVA1 therapy (340–400 nm)) were used successfully as monotherapy in cases of severe atopic eczema whereby both serum ECP levels and blood eosinophilia were dramatically reduced (5). Therefore the possibility that high dose UVA1 therapy might have a beneficial effect in patients suffering from HES was considered.

CASE REPORTS

Three patients (2 men and 1 woman, average age 57.6 years) suffering from HES and severe skin involvement resistant to other therapy except systemic steroids (>40 mg prednisolon per day) were offered UVA1 phototherapy, after informed consent was obtained. Skin lesions, manifested as eczematous and erythematous, partly centrally ulcerated nodules, were disseminated over the whole body. Additionally, in 2 cases oedematous swelling of the extremities and relapsing angioedema were seen. Pruritus was severe in all patients. Other manifestations of HES were eosinophilic neuropathy of the right peroneal nerve in one case and gastric involvement in another. All 3 patients had eosinophilic bone marrow infiltration without signs of malignancy.

Each patient was exposed to 15 irradiations with 50 J/cm^2 UVA1 (340–400 nm) over 3 weeks, resulting in a cumulative dose of 750 J/cm^2 UVA1 (Photomed, Hannover, Germany). Before and after UVA1 therapy, eosinophils in peripheral blood were counted and ECP serum levels were measured by radioimmunoassay. Skin biopsies were taken before and after treatment and the infiltration of eosinophils was studied with HE staining. The number of activated eosinophils and ECP was analysed using the APAAP technique and mAb EG2 (Pharmacia, Uppsala) in frozen tissue sections.

UVA1 therapy resulted in a marked relief from itching and clinical improvement of skin lesions. The non-dermatological symptoms such as the neuropathy and gastrointestinal complaints also improved. No side effects were observed. Parallel to clinical improvement, the eosinophil counts in peripheral blood dropped from mean 35% to mean 16% and the elevated serum ECP levels decreased from mean 142 μg/l to mean 29 μg/l (normal < 12 μg/l). Histologically and immunohistochemically the number of eosinophils and the EG2-positive cells in skin tissue sections decreased after therapy. Main clinical and laboratory findings are summarized in Table I.

Table I. *UVA1-phototherapy in patients with HES and skin involvement results in clinical improvement and decrease of eosinophils and ECP in blood and skin*

Age/sex	57/F	60/M	56/M
Type of skin lesions	Eczema Angioedema Swelling of extremities Itching	Eczema Swelling of extremities Itching	Pruriginous papules Itching
Blood eosinophils (%)			
before UVA1 therapy	58	28	22
after UVA1 therapy	18	16	15
Serum ECP (μg/l)			
before UVA1 therapy	184	198	45
after UVA1 therapy	37	31	20
Decrease (%) of skin eosinophils after UVA1 therapy	74	82	76
Decrease (%) of skin-EG2 +-cells after UVA1 therapy	88	76	32
Remission after cessation of UVA1 therapy (months)	5	18	2

DISCUSSION

High-dose UVA1 monotherapy for treatment of skin manifestations of HES proved to be highly effective leading to prolonged disease stabilization not only of skin, but also of associated internal symptoms. Disease improvement correlated with a decrease of eosinophil numbers and released ECP in blood and tissue, suggesting an effect of UVA1 upon eosinophil-dependent inflammation. Further studies including higher number of patients are warranted for final assessment of UVA1 phototherapy in hypereosinophilic syndrome.

REFERENCES

1. Hardy WR, Anderson RE. The hypereosinophilic syndromes. Ann Intern Med 1968; 68: 1220–1229.
2. Chusid MJ, Dale DC, West BC, Wolff SM. The hypereosinophilic syndrome: analysis of fourteen cases with review of the literature. Medicine 1975; 97: 78–92.
3. Parillo JE, Fauci AS, Wolff SM. Therapy of the hypereosinophilic syndrome. Ann Intern Med 1978; 89: 167–172.
4. Kazmierowski JA, Chusid MJ, Parillo JE, Fauci AS, Wolff SM. Dermatologic manifestations of the hypereosinophilic syndrome. Arch Dermatol 1978; 114: 531–535.
5. Krutmann J, Czeck W, Diepgen TL, Luger TA, Grabbe S, Meffert H et al. High-dose UVA1 therapy for atopic dermatitis: results of a multicenter trial. J Am Acad Dermatol 1999; 38: 589–593.
6. Plötz SG. Bcl-2 expression by eosinophils in a patient with hypereosinophilia. J All Clin Immunol 1999; 102: 1037–1040.
7. Simon HU, Plötz SG, Dummer R, Blaser K. Abnormal clones of T cells producing interleukin-5 in idiopathic eosinophilia. N Engl J Med 1999; 341: 1112–1120.

Accepted January 14, 2000.

Sabine Gisela Plötz[1,2], Dietrich Abeck[1], Ulrike Seitzer[2], Rüdiger Hein[1] and Johannes Ring[1]
[1]Department of Dermatology and Allergy, Biederstein, Technical University, Biedersteiner Straße 29, DE-80802, Munich, Germany and [2]Research Center Borstel, Center for Medicine and Bioscience, Parkallee 22, DE-23845, Borstel, Germany.