
Contact dermatitis in subjects infected with HIV type 1

Stefania Bellegrandi, MD, Rosamaria Rosso, MD, Graziella Mattiacci, MD, Rosetta Ferrara, MD, Gianpiero D'Offizi, MD, Fernando Aiuti, MD, Ivano Mezzaroma, MD, and Roberto Paganelli, MD *Rome, Italy*

In the course of HIV type 1 infection, up to 90% of patients may have skin disease. We studied a group of 26 HIV-infected patients (15 women, 11 men) with symptoms of skin disease or diffuse itching; they were patch tested for common contactants to determine whether allergic contact dermatitis was the cause of their symptoms. We found that approximately one third of HIV-1-positive patients with cutaneous symptoms not related to allergic contact dermatitis had positive patch tests for environmental contactants; in most of them this sensitization was directly related to skin symptoms. (J Am Acad Dermatol 1999;40:777-9.)

In the course of HIV type 1 (HIV-1) infection, up to 90% of patients may have skin diseases.¹ Viral, bacterial, and fungal dermatitis has been described, as well as seborrheic dermatitis and itching.

Several factors are implicated in the pathogenesis of itching in HIV-1 disease. Common causes are folliculitis caused by *Staphylococcus aureus* or *Pityrosporum* infection, exaggerated reactions to insect stings, infestation by *Sarcoptes scabiei*, cutaneous eruptions caused by drug reactions, and

contact dermatitis.²⁻⁴ Adverse drug reactions (ADRs) are the most frequent allergic reactions in HIV-1-positive subjects.⁵ Reactions to sulfamethoxazole-trimethoprim (SMX-TMP), used for the prevention and treatment of *Pneumocystis carinii* pneumonia, are frequently detected in HIV-1-infected subjects⁶ with an incidence up to 80%, compared with 3.3% in the general population.⁷

We studied a group of HIV-1-infected subjects who presented with skin symptoms or diffuse itching. They were patch tested for common contactants (International Contact Dermatitis Research Group series) to evaluate the presence of allergic contact dermatitis as the cause of the symptoms.

MATERIAL AND METHODS

Twenty-six patients with HIV-1 infection, 15 women and 11 men, 25 to 60 years of age (mean, 34 ± 6.2 years [± standard deviation]) consecutively attend-

From the Department of Clinical Medicine, Chair of Allergy & Clinical Immunology, University of Rome, "La Sapienza."

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Reprint requests: Ivano Mezzaroma, MD, Department of Clinical Medicine, University of Rome "La Sapienza," Viale dell'Università, 37-00185, Rome, Italy.

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Table I. Findings in patch-positive HIV-1-infected patients

Patient No.	CDC stage	ICDRG patch series	CD4 cells (%)	CD4 cell (μ L)	Serum IgE (U/L)
1	A2	Nickel+++, <i>p</i> -phenylenediamine+, palladium++	24	397	108
2	B2	Nickel+++, Balsam of Peru++	16	269	68
3	B3	Cadmium+	8	124	110
4	A2	Nickel+++, diamine diphenylmethane++++	26	415	36
5	B3	Potassium dichromate++	10	7	15
6	C3	Nickel+++, colophony+++	4	21	17
7	A3	Disperse yellow 3++	8	92	52
8	A3	Kathon CG+	13	109	32

ed our outpatient clinic for itching with or without dermatitis. According to the current (1993) Centers for Disease Control and Prevention (CDC) classification, 12 patients had disease staged as A2/A3, 6 as B2/B3, and 8 as C2/C3. They were all receiving antiretroviral combination therapy with nucleoside analogues at the time of the appearance of skin symptoms, and all drugs were withdrawn for up to 2 weeks without regression of symptoms. The cutaneous manifestations were eczematous dermatitis in 8 patients (with 2 subjects also having episodes of urticaria), maculopapular eruption in 3, essential pruritus in 3, diffuse erythema in 3, morbilliform eruption in 3, pustular dermatitis in 2, and urticarial lesions in 4. In 4 subjects (3 with diffuse erythema and 1 with morbilliform rash) clearing of the skin lesions was followed by intractable itching.

We evaluated the personal and family history of atopy in all patients and then patch tested them on unaffected skin with the European Environmental Contact Dermatitis Group series. Briefly, standard patch chambers, including glycerine as a negative control, were left in place (applied on the trunk) for 72 hours and then removed. Results were assessed after the removal of patches.

In all patients we measured total serum IgE (using the CAP System IgE FEIA, Pharmacia, Uppsala, Sweden). The percentage and absolute number of circulating CD4⁺ T lymphocytes were measured on whole blood lysate incubated with fluorescein isothiocyanate-conjugated anti-CD4 and phycoerythrin-conjugated anti-CD3 (Becton Dickinson Immunocytometry Systems, Mountain View, Calif) by flow cytometry (Cytoron Absolute, Ortho Diagnostic Systems, Raritan, NJ).

The percentage and total number of circulating eosinophils were determined in 24 subjects by standard methods.

Ten HIV-1-positive patients without personal and family history of atopy and no skin lesions were also patch tested with the same series, as controls. Five were classified as having CDC stages A2/A3, 2 were B2, and

3 C2/C3. At the time of the study they were receiving nucleoside analogue-based treatments.

RESULTS

On the basis of family history, 16 of 26 patients (61.5%) had atopic relatives. Personal history of atopic symptoms was reported by 14 subjects (53.8%), including urticaria, bronchial asthma, rhinitis, and food allergy.

Patch tests were positive for one or more haptens in 8 patients (30.8%), as shown in detail in Table I. In 3 patients (Nos. 3, 7, and 8) the finding of a positive test was possibly unrelated to the clinical symptoms, and other factors may have contributed to the onset of skin eruptions. In the remaining 5 patients, avoidance of allergens caused the complete remission of symptoms.

Mean serum levels of IgE were 380 ± 651 U/L (normal values, <200 U/L). Eighteen patients had IgE values less than 200 U/L, 4 had levels between 201 and 1000 U/L, and 4 had values more than 1000 U/L. The 8 subjects with positive patch tests had IgE levels within the normal range (Table I). Mean CD4⁺ cell count was $248 \pm 255/L$ ($13.5\% \pm 9.4\%$). The mean percentage of eosinophils was $5.3\% \pm 5.8\%$ (mean count, $200 \pm 202/L$).

Patch tests performed in 10 HIV-1-positive controls were negative.

DISCUSSION

We found that approximately one third of HIV-1-infected patients with cutaneous symptoms not related to ADR had positive patch tests for environmental contactants; in most of them this sensitization was directly related to skin symptoms. In 6 cases cutaneous manifestations preceded HIV-1 infection; therefore sensitization may have

occurred before seropositivity. However, symptoms recurred despite the immunodeficiency evidenced by the CD4⁺ lymphocyte counts of the 8 patch-positive patients shown in Table I. It is remarkable that, despite cutaneous anergy to recall antigens, contact dermatitis is frequently seen in HIV-infected patients.^{2,4} As recently pointed out,⁸ contact allergic dermatitis is a prototype delayed-type hypersensitivity (DTH) reaction, which should be depressed by cellular immunodeficiency as occurs in HIV-1 infection. However, the substantial difference between contact dermatitis and other DTH reactions lies both in the induction phase and in the nature of the effector cells. Contact sensitization, unlike other DTH reactions, is apparently driven predominantly by CD8⁺ lymphocytes,⁸ which are normal or increased in HIV-1 infection.

The usefulness of performing a standard series of patch tests in HIV-1-infected subjects manifesting cutaneous symptoms not readily explained by skin infections or ADR is also highlighted by the results obtained by careful avoidance of the causative agents. In 5 of the 8 patch test-positive patients, both dietary measures (for nickel sensitivity) and simple avoidance of common sources of the offending haptens led to the complete regression of symptoms.

Mean serum levels of IgE were elevated in our patients, and this may be due in part to the high incidence of personal or family history of atopy (or both) and to the effect of HIV-1 infection itself, which leads to increased IgE, particularly in advanced stages of immunodeficiency.^{9,10} In the 8 patch-positive subjects, serum IgE levels were all within the normal range. In the 8 patch test-negative patients, dermatitis was accompanied by severe itching, and serum IgE levels were elevated (between 300 and 600 U/L in 4 and >1000 U/L in

the other 4). This subgroup of patients resembles the HIV-1-associated hyper-IgE syndrome, which we described previously.¹¹

Our study confirms the utility of careful allergy diagnostic screening in HIV-1-positive persons with cutaneous manifestations not caused by skin infection or ADR.

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