

clinical trials will begin in the United States and Europe by late 2007.

Sharon E. Jacob, MD

Department of Dermatology and Cutaneous Surgery,
University of Miami Miller School of Medicine Miami, FL

References

1. American Contact Dermatitis Society (ACDS). History of the ACDS. Available at: <http://www.contactderm.org> (accessed October 17, 2005).
2. Mekos Laboratories. Available at: <http://www.mekos.dk/page.asp?sideid=28&zcs=27> (accessed November 8, 2005).
3. Fischer TI, Maibach HI. The thin layer rapid use epicutaneous test (TRUE-test), a new patch test method with high accuracy. *Br J Dermatol* 1985;112:63–8.
4. Fischer T, Kreilgard B, Maibach HI. The true value of the TRUE Test for allergic contact dermatitis. *Curr Allergy Asthma Rep* 2001;1:316–22.
5. Marks JG, Jr, et al. North American Contact Dermatitis Group patch test results for the detection of delayed-type hypersensitivity to topical allergens. *J Am Acad Dermatol* 1998;38:911–8.
6. Hoeck U, Lehmann S, Bjarnoe H, et al. New standardized allergens: The experimental TRUE Test Panel from Mekos Laboratories. Available at: <http://www.mekos.dk/page.asp?sideid=98&zcs=27> (accessed November 10, 2005).

Successful Patch Testing despite Concomitant Low-Dose Prednisone Use

To the Editor:

While it is optimal to perform patch testing when patients are off prednisone to avoid suppressing positive reactions, at times patients require oral corticosteroids during patch testing. We describe a patient with an acute generalized eruption temporally associated with starting levothyroxine. Our patient required low-dose prednisone during patch testing because we were unable to clear her. Patch testing delineated causative cosmetic and textile allergens and was extremely beneficial despite concomitant prednisone use.

A 22-year-old woman presented with complaints of redness, pruritus, and soreness beginning on her face and chest and spreading to her trunk and lower extremities for 5 days.

Her history was significant for a left thyroidectomy performed 5 weeks prior to her eruption. Her medications included levothyroxine, which she had started 1 month prior to presentation. The patient was enrolled as a student and was feeling generally well.

On physical examination, she showed weeping papulovesicular plaques of the face, chest, back, abdomen, and upper and lower extremities. She was started empirically on dicloxacillin 250 mg four times daily for 7 days,

desonide ointment 0.05% for her facial dermatitis, and prednisone 30 mg daily in a tapering dose.

A Tzanck preparation and viral and bacterial cultures were negative. A 5 mm punch biopsy result was consistent with a hypersensitivity reaction, “possibly to drug.”

Given the fact that drug eruptions to levothyroxine are rare and this was a crucial medication for this patient, we were reluctant to stop her levothyroxine until allergic contact dermatitis (ACD) was ruled out. We were unable to clear her with the initial prednisone taper, and we therefore maintained her on 10 mg prednisone during patch testing.

She was tested to a modified North American Contact Dermatitis Group Standard, fragrance, cosmetic/preservative, textile, hair, and rubber series (Chemotechnique Diagnostics, Vellinge, Sweden) using Finn Chambers on Scanpor tape (Epitest Ltd OY, Tuusula, Finland). The patches were removed at 48 hours, and readings were performed at 48 and 72 hours.

At 72 hours, she showed ++ reactions to formaldehyde, hexahydro-1,3,5-tris-(2-hydroxyethyl) triazine (Grotan BK Vellinge, Sweden), and benzalkonium chloride. She showed + reactions to p-phenylenediamine, dimethylol dimethyl (DMDM) hydantoin, methylchloroisothiazolinone/methylisothiazolinone (MCI/MI), dimethylol dihydroxyethyleneurea (Fixapret CPN, Chemotechnique Diagnostics), melamine formaldehyde, urea formaldehyde, and sorbitan sesquileate. She showed questionable reactions to the following: benzophenone-4, Disperse Yellow 3, Disperse Red 1, Disperse Blue 106, 4-aminophenol, hydroquinone, and diphenylguanidine.

From the Department of Dermatology, Tufts-New England Medical Center, Boston, MA.

Reprints not available.

DOI 10.2310/6620.2008.07040

Many allergens were found in her skin/hair care products. Her hair dye contained p-phenylenediamine, 4-aminophenol, and benzophenone-4. A body lotion, a shampoo, and a soap contained MCI/MI. A makeup remover and another lotion contained benzalkonium chloride and quaternium-15. A soap contained benzophenone-4, and another lotion contained a sorbitan derivative. The patient had been very compliant with office appointments while she had active dermatitis, but failed to return for follow-up 1 month after patch testing.

Based on her biopsy, patch-test results, and various allergens found within her products, we diagnosed her with ACD and felt comfortable that this was not a drug eruption to levothyroxine. Her eruption likely had been so resistant to therapy because many of her daily skin/hair care products contained allergens and because there was a textile source contributing to her symptoms on her trunk and extremities.

The effect of prednisone on patch-test reactivity has not been studied extensively. One study conducted by Feuerman and Levy in the 1970s investigated the effects of various doses of prednisone on 43 patients with previously known reactivity to potassium dichromate and mercury.¹ Subjects received 20 mg, 30 mg, and 40 mg of prednisone, respectively. Each prednisone dose was administered 48 hours prior to testing and maintained during testing. Readings were conducted on days 2, 3, and 4. They found that with 20 mg prednisone, only 6% of reactions were completely suppressed, but with increasing doses of prednisone, increasing percentages of reactions were completely suppressed.¹

A more recent study conducted by Anveden and colleagues studied 24 subjects in a multicenter, double-blinded, placebo crossover study.² They investigated the effects of prednisone versus placebo on patch-test results for various irritants and also for various dilutions of nickel sulfate in sensitized individuals. Oral prednisone 20 mg was administered 48 hours prior to and during testing, with readings conducted on days 2, 3, and 7.² The sum of the positive patch-test reactions was analyzed for patients on prednisone versus those on placebo. Patients on placebo showed significantly more reactivity to various dilutions of nickel sulfate than those patients who were on prednisone. However, those patients tested with nickel sulfate 5% on 20 mg prednisone still maintained 75% as many reactions as the placebo group.²

Glucocorticoids (GCs) have many immunomodulatory and antiinflammatory properties. GCs can suppress T-cell activation by inhibiting growth factors and cytokines such as interleukin (IL)-2, granulocyte-macrophage colony-

stimulating factor, IL-4, IL-6, and interferon- γ .³ GCs can also impair dendritic-cell function.⁴ According to Rozkova and colleagues, immature dendritic cells are suppressed in the presence of high-dose GCs, thereby decreasing IL-20 and tumor necrosis factor production, which overall inhibits T-cell stimulatory function.⁴

It has also been shown, however, in vitro, that co-stimulatory effects of IL-2 and CD28 can abrogate the suppressive action of dexamethasone on T-cell proliferation.⁵ In vivo, the degree of co-stimulation in the local environment is modulated according to the need for local immune defense.⁵ Therefore, GC immunosuppressive effects could be abrogated by conditions prevailing in the local milieu promoting the development of effector T cells.⁵ From the above data, one could see how challenging a sensitized individual with an allergen via patch testing could lead to abrogation of the suppressive effects of GCs and yield a positive patch-test reaction locally.

Our patient's eruption was quite refractory to treatment precisely because her allergens were present in many cosmetics and clothing. The benefits of finding causative allergens outweigh the risks of suppressing positive reactions in patients who have very recalcitrant rashes. Therefore, it is worthwhile to patch-test such patients even if they require low-dose prednisone during testing. Dosages of 20 mg or less of prednisone do not appear to significantly alter test results.

Titilayo Olupona, MD

Pamela Scheinman, MD

Department of Dermatology

Tufts-New England Medical Center

Boston, MA

References

1. Feuerman E, Levy A. A study of the effect of prednisone and an antihistamine on patch test reactions. *Br J Dermatol* 1972;86:68-71.
2. Anveden I, Lindberg M, Andersen KE, et al. Oral prednisone suppresses allergic but not irritant patch test reactions in individuals hypersensitive to nickel. *Contact Dermatitis* 2004;50:298-303.
3. Kunicka JE, Talle MA, Denhardt GH, et al. Immunosuppression by glucocorticoids: inhibition of production of multiple lymphokines by in vivo administration of dexamethasone. *Cell Immunol* 1993;149:39-49.
4. Rozkova D, Horvath R, Bartunkova J, Spisek R. Glucocorticoids severely impair differentiation and antigen presenting function of dendritic cells despite upregulation of Toll-like receptors. *Clin Immunol* 2006;120:260-71.
5. Tsitoura DC, Rothman PB. Enhancement of MEK/ERK signaling promotes glucocorticoid resistance in CD4+ T cells. *J Clin Invest* 2004;113:619-27.